



# **STIC Search Report**

## **Biotech-Chem Library**

**STIC Database Tracking Number: 207134**

**TO: Jennifer Cho**  
**Location: rem/5C15/5C18**  
**Art Unit: 1621**  
**Tuesday, January 09, 2007**

**Case Serial Number: 10/530572**

**From: Paul Schulwitz**  
**Location: EIC 1600**  
**REM-1A65**  
**Phone: 571-272-2527**

**Paul.schulwitz@uspto.gov**

### **Search Notes**

Examiner Cho,

Please review the attached search results.

If you have any questions or if you would like to refine the search query, please feel free to contact me at any time.

Thank you for using STIC search services!

Paul Schulwitz  
Technical Information Specialist  
REM-1A65  
571-272-2527

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FILE 'HCAPLUS' ENTERED AT 17:35:03 ON 29 DEC 2006  
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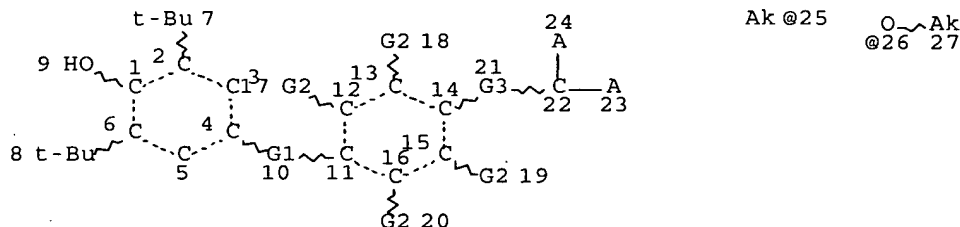
FILE COVERS 1907 - 29 Dec 2006 VOL 146 ISS 2  
 FILE LAST UPDATED: 28 Dec 2006 (20061228/ED)

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L20 STR



REP G1=(0-15) A

VAR G2=H/X/25/26

REP G3=(0-10) A

NODE ATTRIBUTES:

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CONNECT IS E1 RC AT 25

CONNECT IS E1 RC AT 27

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

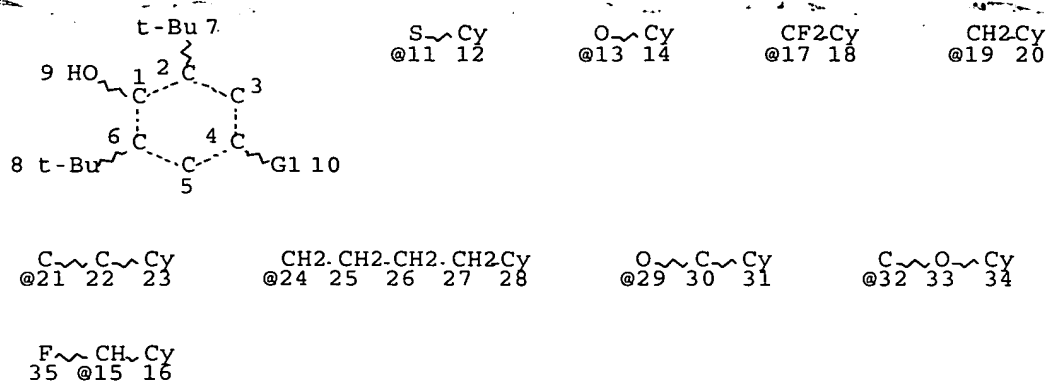
RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 27

STEREO ATTRIBUTES: NONE

L22 377 SEA FILE=REGISTRY SSS FUL L20

L25 STR



VAR G1=CY/11/13/17/19/21/24/29/32/15

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 35

STEREO ATTRIBUTES: NONE

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L37	1	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	35439-93-1	
L38	74	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	L34 NOT L37	
L42	1	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	L38 AND C57H77NO8/MF	
L43	73	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	L38 NOT L42	
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L47	1	SEA	FILE=REGISTRY	ABB=ON	PLU=ON	L46 AND C47H71NO3/MF	
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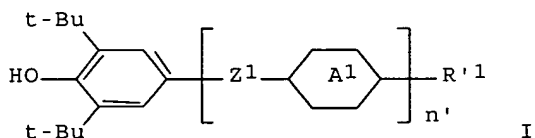
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 L91 40 SEA FILE=REGISTRY ABB=ON PLU=ON L89 NOT L90  
 L92 1 SEA FILE=REGISTRY ABB=ON PLU=ON L91 AND C28H42O2/MF  
 L93 39 SEA FILE=REGISTRY ABB=ON PLU=ON L91 NOT L92  
 L94 2 SEA FILE=REGISTRY ABB=ON PLU=ON L93 AND TI/ELS  
 L95 37 SEA FILE=REGISTRY ABB=ON PLU=ON L93 NOT L94  
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 L97 36 SEA FILE=REGISTRY ABB=ON PLU=ON L95 NOT L96  
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 METHYLETHYL) -4-HYDROXY-, 2,6-DIMETHYL-4-(1-METHYLPROPYL) PHENYL  
 ESTER"/CN  
 L103 34 SEA FILE=REGISTRY ABB=ON PLU=ON L102 OR L100  
 L104 24 SEA FILE=HCAPLUS ABB=ON PLU=ON L103

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L104 ANSWER 1 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:307331 HCAPLUS Full-text  
 DOCUMENT NUMBER: 140:347642  
 TITLE: Chiral phenol derivative, liquid crystal medium  
 containing the same, preparation of the liquid crystal  
 medium and electrooptical liquid crystal display  
 INVENTOR(S): Reiffenrath, Volker; Heckmeier, Michael  
 PATENT ASSIGNEE(S): Merck Patent GmbH, Germany  
 SOURCE: Ger. Offen., 42 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10246657	A1	20040415	DE 2002-10246657	20021007

WO 2004033406 A1 20040422 WO 2003-EP10398 20030918  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 AU 2003283251 A1 20040504 AU 2003-283251 20030918  
 EP 1549599 A1 20050706 EP 2003-775161 20030918  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK  
 JP 2006502205 T 20060119 JP 2004-542358 20030918  
 US 2006011888 A1 20060119 US 2005-530572 20050407  
 PRIORITY APPLN. INFO.: DE 2002-10246657 A 20021007  
 WO 2003-EP10398 W 20030918  
 OTHER SOURCE(S): MARPAT 140:347642  
 GI



AB The invention relates to a chiral phenol derivative represented by I ( $R^*1$  = chiral group;  $Z1$  =  $-CH_2CH_2-$ ,  $-CH=CH-$ , etc.;  $A1$  = trans-1,4-cyclohexylene, 1,4-cyclohexenylene, etc.;  $n1$  = 1-3) and a nematic liquid crystal mixture containing the chiral phenol derivative as a cholesteric phase inducing chiral dopant and/or stabilizer. The chiral phenol derivative was synthesized and the nematic liquid crystal mixture was prepared

ED Entered STN: 15 Apr 2004

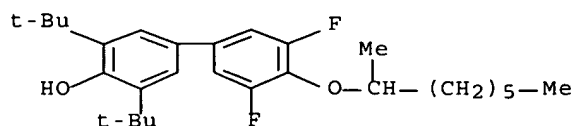
IT 679436-59-0P

RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(synthesis of chiral phenol derivative as cholesteric phase inducing dopant and stabilizer in nematic liquid crystal mixture suitable for liquid crystal display)

RN 679436-59-0 HCAPLUS

CN [1,1'-Biphenyl]-4-ol, 3,5-bis(1,1-dimethylethyl)-3',5'-difluoro-4'-[(1-methylheptyl)oxy]- (9CI) (CA INDEX NAME)



L104 ANSWER 2 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:198803 HCAPLUS Full-text

DOCUMENT NUMBER: 128:217352

TITLE: Synthesis and biological activity of tyrosine protein kinase inhibitors

AUTHOR(S): Pan, Shuhua; Guo, Zongru; Liang, Xiaotian

CORPORATE SOURCE: Institute of Materia Medica, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, 100050, Peop. Rep. China

SOURCE: Yaoxue Xuebao (1997), 32(7), 515-523

CODEN: YHHPAL; ISSN: 0513-4870

PUBLISHER: Chinese Academy of Medical Sciences, Institute of Materia Medica

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

AB Four classes of 25 tyrosine protein kinase (TPK) inhibitors were designed and synthesized. Inhibiting effects of synthesized compds. on TPK of HL-60 leukemia cell were tested using 32P-ATP method, and some of them exhibited evident inhibitory activities. Their structure-activity relationship were similar to that of TPK inhibitors reported in literatures. Inhibiting effects of synthesized. compds. on TPK of normal rat spleen cell were also tested using ELISA method, and their SAR were different from that using 32P-ATP method.

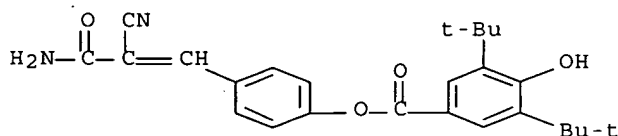
ED Entered STN: 08 Apr 1998

IT 204380-77-8P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)  
(synthesis and biol. activity of tyrosine protein kinase inhibitors)

RN 204380-77-8 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 4-(3-amino-2-cyano-3-oxo-1-propenyl)phenyl ester (9CI) (CA INDEX NAME)



L104 ANSWER 3 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1992:128356 HCAPLUS Full-text

DOCUMENT NUMBER: 116:128356

TITLE: Preparation of aniline derivatives as low-density lipoprotein inhibitors

INVENTOR(S): Kato, Yasuyuki; Tamura, Kunio; Ohba, Yasuhiro; Kawanabe, Yoshiki; Shinshi, Osamu

PATENT ASSIGNEE(S): Chugai Pharmaceutical Co., Ltd., Japan

SOURCE: PCT Int. Appl., 110 pp.

CODEN: PIXXD2

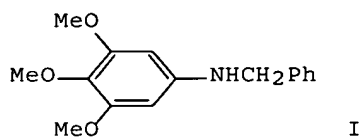
DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9111994	A1	19910822	WO 1991-JP179	19910214
W: AT, AU, BB, BG, BR, CA, CH, DE, DK, ES, FI, GB, HU, JP, KR, LK, LU, MC, MG, MW, NL, NO, PL, RO, SD, SE, SU, US				
RW: AT, BE, BF, BJ, CF, CG, CH, CM, DE, DK, ES, FR, GA, GB, GR, IT, LU, ML, MR, NL, SE, SN, TD, TG				
CA 2076012	A1	19910815	CA 1991-2076012	19910214
AU 9173173	A	19910903	AU 1991-73173	19910214
ZA 9101101	A	19911127	ZA 1991-1101	19910214
EP 515684	A1	19921202	EP 1991-904623	19910214
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE				
PRIORITY APPLN. INFO.:			JP 1990-33545	A 19900214
			WO 1991-JP179	A 19910214
OTHER SOURCE(S):		MARPAT 116:128356		
GI				



AB Aniline derivs., e.g., I, useful in treating arteriosclerosis, peptic ulcer, cancer, ischemic organ disease, inflammation, and pulmonary silicosis, are prepared PhCH<sub>2</sub>Br (6.0 mL) and 7.5 mL DBU were added to a solution of 9.16 g 3,4,5-(MeO)<sub>3</sub>C<sub>6</sub>H<sub>2</sub>NH<sub>2</sub> in DMF with stirring to give 6.52 g I, which showed 33% inhibition of thiobarbituric acid reactive substances (a measure of antioxidn. activity) at 10<sup>-5</sup>M. Also prepared were 214 addnl. aniline derivs.

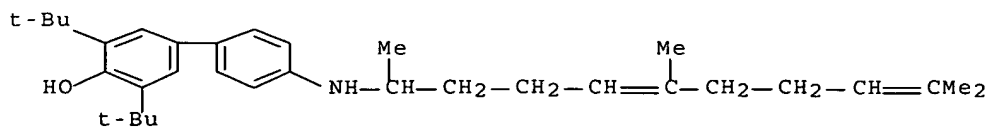
ED Entered STN: 03 Apr 1992

IT 138299-43-1P 138299-44-2P

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); BIOL (Biological study); PREP (Preparation)  
(preparation of, as drug)

RN 138299-43-1 HCAPLUS

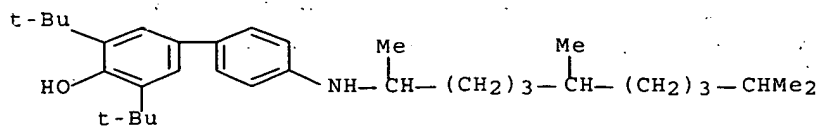
CN [1,1'-Biphenyl]-4-ol, 3,5-bis(1,1-dimethylethyl)-4'--[(1,5,9-trimethyl-4,8-decadienyl)amino]- (9CI) (CA INDEX NAME)



RN 138299-44-2 HCAPLUS

CN [1,1'-Biphenyl]-4-ol, 3,5-bis(1,1-dimethylethyl)-4'--[(1,5,9-trimethyldecyl)amino]- (9CI) (CA INDEX NAME)





L104 ANSWER 4 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1990:575391 HCAPLUS Full-text  
 DOCUMENT NUMBER: 113:175391  
 TITLE: Haze-free boronated antioxidant  
 INVENTOR(S): Wright, William E.; Davis, Bryan T.; Matteson, Donald S.; Knapp, Gordon G.  
 PATENT ASSIGNEE(S): Ethyl Corp., USA  
 SOURCE: U.S., 8 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4927553	A	19900522	US 1983-492354	19830506

PRIORITY APPLN. INFO.: US 1983-492354 19830506

AB A hydrolytically stable additive composition (e.g., for lubricating oil) comprises 75-99.5 weight parts of a boronated phenolic antioxidant and 0.5-25 weight parts of pinane diol or pinacol; the antioxidant is a mixture of 4,4'-methylenebis(2,6-di-tert-butylphenol) 0-50, 4,4'-methylenebis(2,6-di-tertbutylphenol)-di-(di-sec-butyl orthoborate) 10-75, and 4,4'-methylenebis(2,6-di-tert-butylphenol)-mono-(di-sec-butyl orthoborate) 5-75 weight%. The diol is capable of reacting with boric acid formed as a hydrolysis product to form a stable ring structure soluble in a substrate. The additive composition prevents or cures a haze caused by hydrolysis.

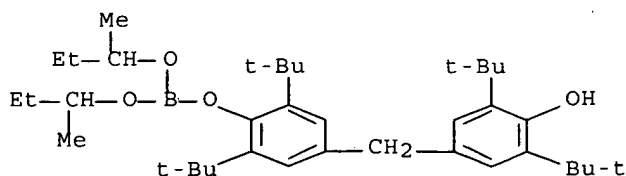
ED Entered STN: 09 Nov 1990

IT 88276-82-8

RL: USES (Uses)  
 (boronated antioxidants containing, pinane diol or pinacol in, for lubricating oils, for prevention and correction of haze caused by hydrolysis)

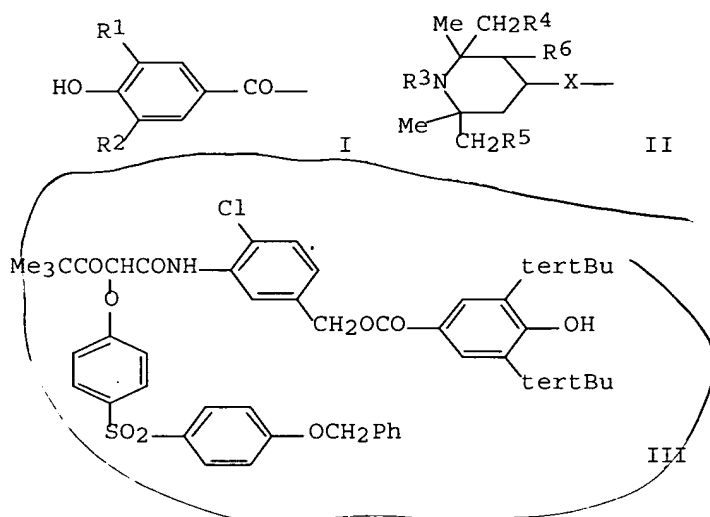
RN 88276-82-8 HCAPLUS

CN Boric acid (H3BO3), 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl]methyl]-2,6-bis(1,1-dimethylethyl)phenyl bis(1-methylpropyl) ester (9CI) (CA INDEX NAME)



L104 ANSWER 5 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1990:449667 HCAPLUS Full-text  
 DOCUMENT NUMBER: 113:49667  
 TITLE: Color photographic material containing yellow coupler  
 INVENTOR(S): Tanji, Masaki; Nishijima, Toyoki  
 PATENT ASSIGNEE(S): Konica Co., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01219835	A	19890901	JP 1988-46152	19880229
PRIORITY APPLN. INFO.: GI			JP 1988-46152	19880229



AB The photog. material, on a support, has a yellow dye-forming coupler containing  $\geq 1$  partial unit selected from the p-hydroxybenzoyl group I ( $R_1$ ,  $R_2$  = alkyl) and/or the piperidinyllike group II ( $R_3$  = H, alkyl, alkenyl, acyl;  $R_4$ - $R_6$  = H, alkyl; X = a divalent linking group) in  $\geq 1$  Ag halide emulsion layer and has  $\geq 90$  mol% of AgCl-containing Ag halide grains in  $\geq 1$  Ag halide emulsion layer. Thus, a photog. material with a blue-sensitive Ag(Br,Cl) emulsion layer containing the yellow coupler III gave a yellow dye image with a high color d. and light resistance by rapid processing.

ED Entered STN: 03 Aug 1990

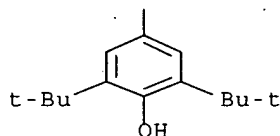
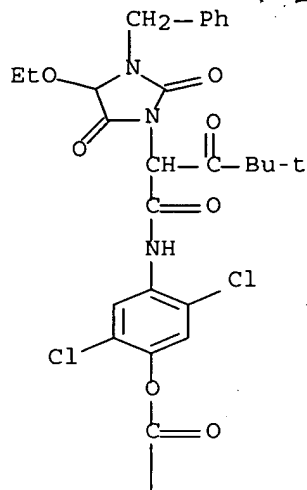
IT 113658-56-3

RL: TEM (Technical or engineered material use); USES (Uses)

(photog yellow coupler, for color materials for rapid processing)

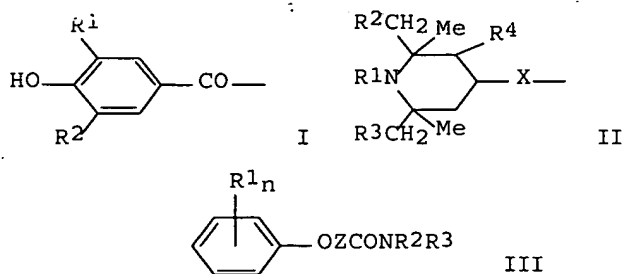
RN 113658-56-3 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,5-dichloro-4-[[2-[4-ethoxy-2,5-dioxo-3-(phenylmethyl)-1-imidazolidinyl]-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)



L104 ANSWER 6 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1990:431808 HCAPLUS Full-text  
 DOCUMENT NUMBER: 113:31808  
 TITLE: Color photographic material with improved  
 lightfastness and color reproducibility  
 INVENTOR(S): Tai, Akiyoshi; Nishijima, Toyoki  
 PATENT ASSIGNEE(S): Konica Co., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 30 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01250944	A	19891005	JP 1988-79219	19880330
PRIORITY APPLN. INFO.: GI			JP 1988-79219	19880330



AB The title color photog. material contains a yellow coupler having the substructure I [R1, R2 = alkyl] or II [R1 = H, alkyl, alkenyl, alkynyl, aryl; R2-4 = H, alkyl; X = a divalent linking group] and  $\geq 1$  compound selected from hindered-phenol-type compds., polyalkylpiperidines, benzotriazole-type UV absorbers, and the compds. having the structure III [R = alkyl, alkoxy; Z = a divalent linking group; R2, R3 = H, alkyl, aryl, heterocyclyl; n = 1-3].

ED Entered STN: 21 Jul 1990

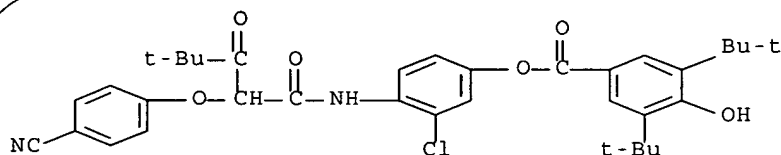
IT 113658-51-8 127929-13-9

RL: USES (Uses)

(yellow photog. coupler, for providing dye images of improved colorfastness)

RN 113658-51-8 HCAPLUS

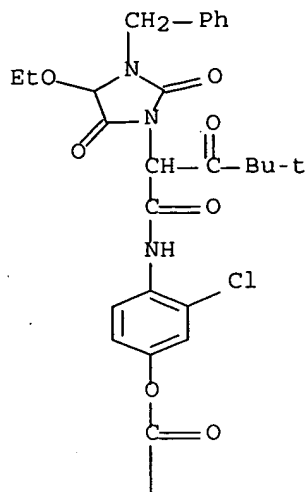
CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 3-chloro-4-[[2-(4-cyanophenoxy)-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)



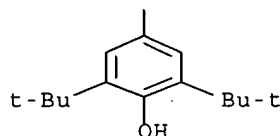
RN 127929-13-9 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 3-chloro-4-[[2-[4-ethoxy-2,5-dioxo-3-(phenylmethyl)-1-imidazolidinyl]-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

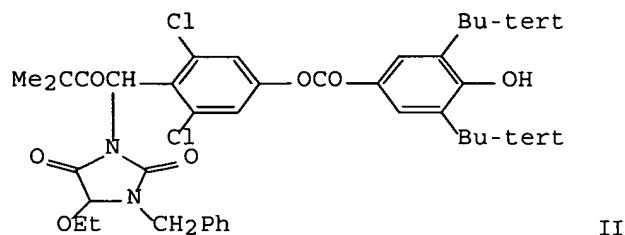
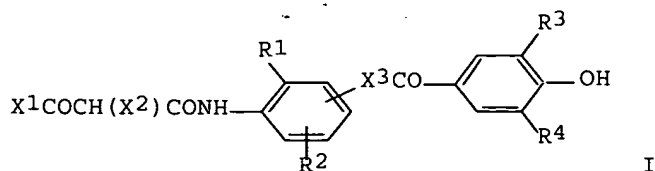


PAGE 2-A



L104 ANSWER 7 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1990:88171 HCAPLUS Full-text  
 DOCUMENT NUMBER: 112:88171  
 TITLE: Silver halide photographic materials containing yellow couplers  
 INVENTOR(S): Nishijima, Toyoki  
 PATENT ASSIGNEE(S): Konica Co., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01177549	A	19890713	JP 1988-2076	19880107
US 4954432	A	19900904	US 1988-291750	19881229
PRIORITY APPLN. INFO.: GI			JP 1988-2076	A 19880107



AB Yellow couplers I (R1 = halo, Cl-4-alkoxy; R2 = H, halo, alkyl, alkoxy, R3-4 = alkyls as anchor groups; X1 = tert-Bu, p-alkoxyphenyl; X2 = H, leaving group; X3 = connecting group), and high-boiling solvents with dielec. constant  $\leq 6.0$ , are contained in emulsion layer(s) of the photog. materials. These provide decrease of defects in coating process, high fastness in exposure, and good gradation. Thus, 100 g II dissolved in mixture of 100 mL dioctyl phthalate and 200 mL EtOAc was homogenized with gelatin solution and mixed with blue-sensitive Ag(Cl,Br) emulsion. Polyethylene-coated paper was coated with this mixture, exposed with blue light, and normally developed. Number of defects in coating process was much smaller than when coupler-solvent combinations outside the invention were used. Obtained image showed high fastness to exposure to sunlight, and high  $\gamma$  value. Application of the invention to full-color paper also showed good results.

ED Entered STN: 03 Mar 1990

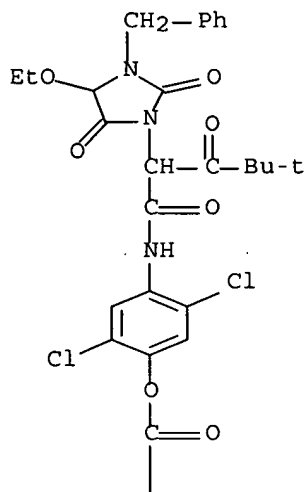
IT 113658-56-3

RL: TEM (Technical or engineered material use); USES (Uses)  
(photog. coupler, yellow, with low-dielec. solvents, coating ease and color fastness of)

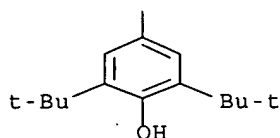
RN 113658-56-3 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,5-dichloro-4-[[2-[4-ethoxy-2,5-dioxo-3-(phenylmethyl)-1-imidazolidinyl]-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)

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L104 ANSWER 8 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1990:77207 HCAPLUS Full-text  
 DOCUMENT NUMBER: 112:77207  
 TITLE: Preparation and formulation of 2-[1-(phenoxyphenyl)ethan-1-ylidene]-1,3-dithianes and analogs as anticholesteremics  
 INVENTOR(S): Nagamine, Masashi; Hiraga, Kunikazu; Sakai, Atsushi; Uchida, Matazaemon  
 PATENT ASSIGNEE(S): Nihon Nohyaku Co., Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 40 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

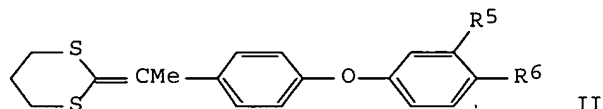
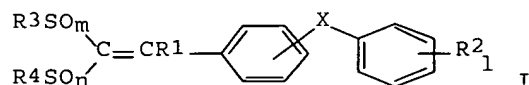
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 324472	A2	19890719	EP 1989-100480	19890112
EP 324472	A3	19890823		
EP 324472	B1	19920902		
R: AT, BE, CH, DE, ES, FR, GB, GR, IT, LI, LU, NL, SE				
CA 1327361	C	19940301	CA 1989-587377	19890103

10/530,572

January 3, 2007

AU 8928369	A	19890720	AU 1989-28369	19890111
AU 608401	B2	19910328		
NO 8900141	A	19890717	NO 1989-141	19890112
NO 169892	B	19920511		
NO 169892	C	19920819		
AT 80161	T	19920915	AT 1989-100480	19890112
ES 2046334	T3	19940201	ES 1989-100480	19890112
DK 8900137	A	19890715	DK 1989-137	19890113
FI 8900178	A	19890715	FI 1989-178	19890113
FI 91399	B	19940315		
FI 91399	C	19940627		
HU 49849	A2	19891128	HU 1989-120	19890113
HU 203868	B	19911028		
KR 9711008	B1	19970705	KR 1989-293	19890113
JP 02000770	A	19900105	JP 1989-6286	19890114
US 5098928	A	19920324	US 1990-602932	19901025
PRIORITY APPLN. INFO.:			JP 1988-6303	A 19880114
			US 1989-295365	B1 19890110
			EP 1989-100480	A 19890112

GI



AB The title compds. [I; R1 = C1-6 alkyl optionally substituted by C2-7 alkoxy carbonyl, di(C1-4 alkyl)amino, CO2H; R2 = H, halo, OH, CO2H, (un)substituted C1-16 alkyl, etc.; R3, R4 = C1-6 alkyl; R3R4 = (N-interrupted) C2-4 alkylene; X = O, S, CH2; l = 1-3; m, n = 0, 1] were prepared. Thus, 2-diethoxyphosphoryl-1,3-dithiane was stirred 1 h at -73° with BuLi in THF after which 4-(4-fluorophenoxy)acetophenone was added and stirring continued overnight to give 92.1% title compound II (R5 = H, R6 = F) (III). II (R5 = OH, R6 = H) gave a 91% reduction of elevated blood cholesterol levels in rats receiving 5 mL/kg/day a solution (0.6 or 6.0 weight/volume%) for 4 days. A powder was prepared containing III, MgO 10, and lactose 80 parts.

ED Entered STN: 03 Mar 1990

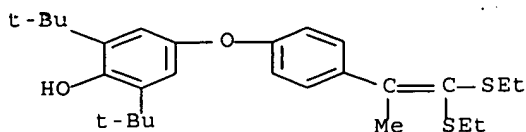
IT 124747-13-3P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, as anticholesteremic)

RN 124747-13-3 HCAPLUS

CN Phenol, 4-[4-[2,2-bis(ethylthio)-1-methylethenyl]phenoxy]-2,6-bis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

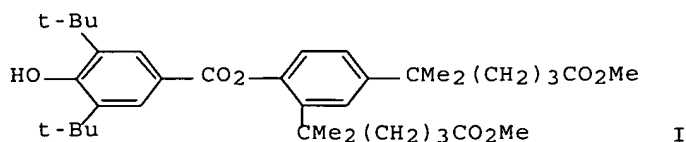




L104 ANSWER 9 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1989:605312 HCAPLUS Full-text  
 DOCUMENT NUMBER: 111:205312  
 TITLE: Stabilizers for color photographic materials  
 INVENTOR(S): Leppard, David G.  
 PATENT ASSIGNEE(S): Ciba-Geigy A.-G., Switz.  
 SOURCE: Eur. Pat. Appl., 36 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

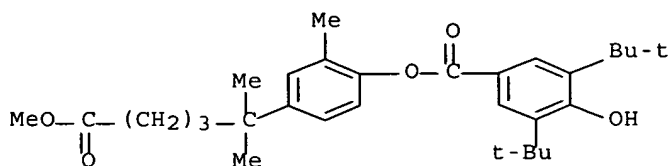
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 309957	A1	19890405	EP 1988-115785	19880926
EP 309957	B1	19920527		
R: BE, DE, FR, GB, IT, NL				
JP 01108545	A	19890425	JP 1988-243755	19880928
US 5059515	A	19911022	US 1990-590038	19900928
US 5202458	A	19930413	US 1991-740587	19910805
PRIORITY APPLN. INFO.:			CH 1987-3751	A 19870928
			US 1988-250850	B1 19880928
			US 1990-590038	A3 19900928

GI



AB Phenolic derivs. are described which are useful as light stabilizers in color photog. materials. A color photog. paper containing a yellow coupler, a gelatin-AgBr emulsion, a triazine derivative hardener, and the phenolic light stabilizer I was wedge exposed, processed, and the yellow wedge then exposed in an Atlas Weather-Ometer (30 kJ/cm<sup>2</sup>) to show a dye d. loss of 34%.  
 ED Entered STN: 25 Nov 1989  
 IT 123632-75-7  
 RL: USES (Uses)  
 (photog. light stabilizer)  
 RN 123632-75-7 HCAPLUS  
 CN Benzenepentanoic acid, 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxybenzoyl]oxy]- $\delta,\delta,3$ -trimethyl-, methyl ester (9CI) (CA

INDEX NAME)



L104 ANSWER 10 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1988:158987 HCAPLUS Full-text  
 DOCUMENT NUMBER: 108:158987  
 TITLE: Acetanilide derivative photographic yellow coupler  
 INVENTOR(S): Buckland, Paul Richard; Tsoi, Siu Chung  
 PATENT ASSIGNEE(S): Eastman Kodak Co., USA; Kodak Ltd.  
 SOURCE: Eur. Pat. Appl., 21 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 249473	A2	19871216	EP 1987-305161	19870611
EP 249473	A3	19890510		
EP 249473	B1	19920812		
R: DE, FR, GB, NL				
US 4758501	A	19880719	US 1987-58308	19870605
JP 62297846	A	19871225	JP 1987-143431	19870610
JP 2633853	B2	19970723		
PRIORITY APPLN. INFO.:			GB 1986-14213	A 19860611

GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB An acetanilide derivative photog. yellow coupler has the general formula I (R = tert-Bu or p-alkoxyphenyl; R1 = H or a group which splits off upon color development; R2 = halogen or Cl-4 alkoxy; R3 = halogen, alkoxy or alkyl; R4, R5 = alkyl so chosen that the coupler is nondiffusible when present in a photog. material; Z = a linking group providing image dyes of improved stability). Preferred color developing agents for color Ag halide photog. materials containing the I couplers are p-phenylenediamine derivs. Thus, a Ag halide photog. emulsion containing the yellow coupler II was prepared, coated on a support, overcoated with a protective layer, exposed through a step tablet, developed in a solution containing I, bleached, fixed, washed, and dried. The processed photog. material was then exposed to a high-intensity Xe lamp (50 Klx) through a Wratten 2B filter for 2 wk to show a d. decrease ( $\Delta D$ ) of the dye image of 0.06 (from D = 1.7).

ED Entered STN: 30 Apr 1988

IT 113658-51-8 113658-55-2 113658-56-3

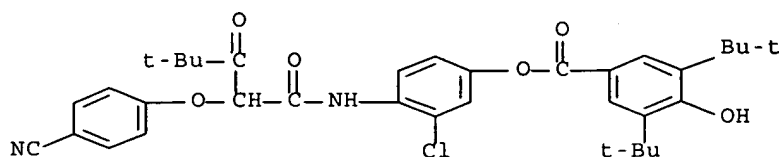
113658-57-4

RL: TEM (Technical or engineered material use); USES (Uses)

(photog. yellow coupler, for forming dye images of improved durability)

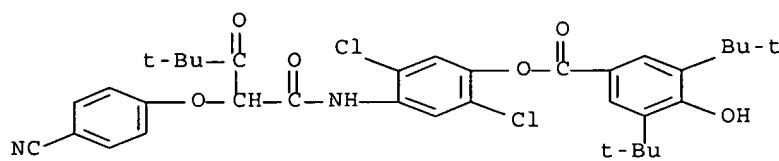
RN 113658-51-8 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 3-chloro-4-[[2-(4-cyanophenoxy)-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)



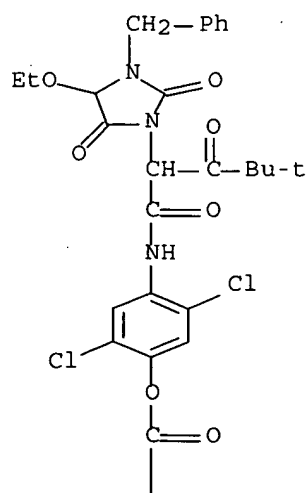
RN 113658-55-2 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,5-dichloro-4-[[2-(4-cyanophenoxy)-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)



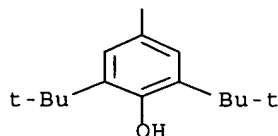
RN 113658-56-3 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,5-dichloro-4-[[2-[4-ethoxy-2,5-dioxo-3-(phenylmethyl)-1-imidazolidinyl]-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)



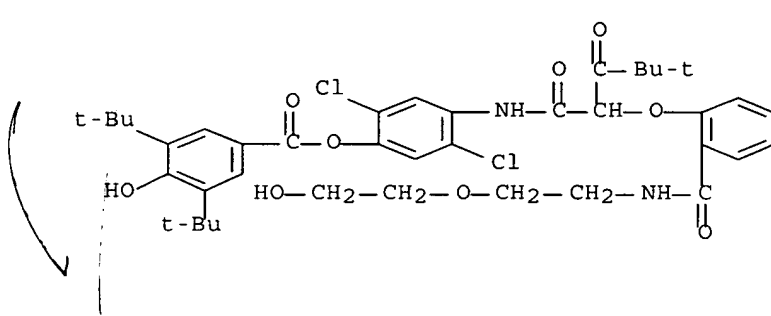
PAGE 1-A

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RN 113658-57-4 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,5-dichloro-4-[[2-[2-[[[2-(2-hydroxyethoxy)ethyl]amino]carbonyl]phenoxy]-4,4-dimethyl-1,3-dioxopentyl]amino]phenyl ester (9CI) (CA INDEX NAME)



L104 ANSWER 11 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1987:70140 HCAPLUS Full-text

DOCUMENT NUMBER: 106:70140

TITLE: Fuel compositions

INVENTOR(S): Zaweski, Edward F.; Niebylski, Leonard M.

PATENT ASSIGNEE(S): Ethyl Corp., USA

SOURCE: U.S., 7 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4623360	A	19861118	US 1985-793624	19851031
PRIORITY APPLN. INFO.:			US 1985-793624	19851031

AB Diesel fuels for indirect-injection compression ignition engines are modified by adding a combination of (1) an organic nitrate ignition accelerator and (2) a boronated phenolic compound. The additive minimizes coking in prechambers or swirl chambers of engines. Mixed octyl nitrates 140 and the boronated phenol mixture 50 lb/1000 barrels were added to diesel fuel (cetane number 37, containing aroms. 41, olefins 2, and saturated hydrocarbons 57%). The modified diesel fuel was tested for 4 h in an engine at 1750 rpm, air temperature of 510-520°, air flow rate 32.5 L/min, and fuel flow rate 135

cm<sup>3</sup>/h. The amount of coking deposits was considerably less than that obtained with the unmodified diesel fuel.

ED Entered STN: 07 Mar 1987

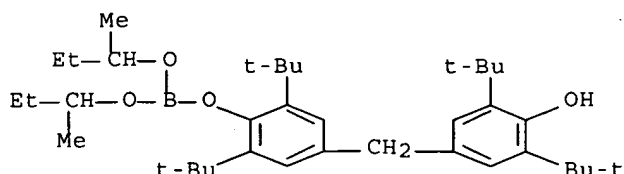
IT 88276-82-8

RL: USES (Uses)

(diesel fuel additive containing, for coking prevention)

RN 88276-82-8 HCAPLUS

CN Boric acid (H<sub>3</sub>BO<sub>3</sub>), 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl]methyl]-2,6-bis(1,1-dimethylethyl)phenyl bis(1-methylpropyl) ester (9CI) (CA INDEX NAME)



L104 ANSWER 12 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1984:22793 HCAPLUS Full-text

DOCUMENT NUMBER: 100:22793

TITLE: Boron-containing esters, and their use as antioxidants

INVENTOR(S): Wright, William E.

PATENT ASSIGNEE(S): Ethyl Corp., USA

SOURCE: Eur. Pat. Appl., 26 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 89844	A1	19830928	EP 1983-301562	19830321
EP 89844	B1	19851204		
R: BE, CH, DE, FR, GB, IT, LI, NL				
JP 58213082	A	19831210	JP 1983-47824	19830322
PRIORITY APPLN. INFO.:			US 1982-360781	A 19820322

OTHER SOURCE(S): MARPAT 100:22793

AB 4,4'-Methylenebis(2,6-di-tert-butylphenol) mono- or bis(di-sec-C<sub>4</sub>-12 alkyl orthoborate) esters, antioxidants for lubricating oils, were prepared. Thus, 0.535 mol tri-sec-Bu orthoborate and 0.267 mol 4,4'-methylenebis(2,6-di-tert-butylphenol) (I) were stirred under nitrogen for 21 h while gradually heating from 213 to 256°. The product contained 18 weight% I, 51 weight% monoester, and 24 weight% di-ester. The ester product was a more effective antioxidant for lubricating oils than was I itself.

ED Entered STN: 12 May 1984

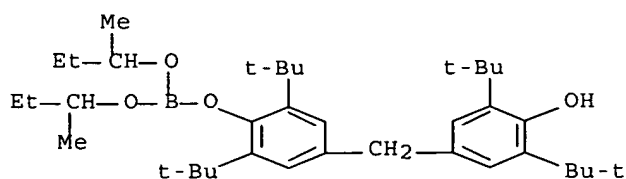
IT 88276-82-8P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation and use as antioxidant for lubricating oils)

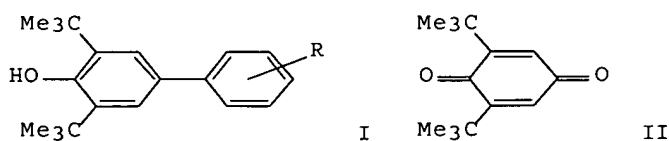
RN 88276-82-8 HCAPLUS

CN Boric acid (H<sub>3</sub>BO<sub>3</sub>), 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl]methyl]-2,6-bis(1,1-dimethylethyl)phenyl bis(1-methylpropyl) ester (9CI) (CA INDEX NAME)



L104 ANSWER 13 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1980:94050 HCAPLUS Full-text  
 DOCUMENT NUMBER: 92:94050  
 TITLE: Anti-inflammatory agents  
 INVENTOR(S): Moore, George G. I.  
 PATENT ASSIGNEE(S): Riker Laboratories, Inc., USA  
 SOURCE: U.S., 4 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4172151	A	19791023	US 1977-861892	19771219
US 4219501	A	19800826	US 1979-55334	19790706
US 4232043	A	19801104	US 1979-55324	19790706
PRIORITY APPLN. INFO.:			US 1977-797137	A3 19770516
			US 1977-861892	A3 19771219
OTHER SOURCE(S):	MARPAT 92:94050			
GI				



AB Di-tert-butylphenylphenols I (R = H, NH<sub>2</sub>, alkanamido, NHCOCF<sub>3</sub>), useful as anti-inflammatory agents, analgesics, antipyretics, and immunosuppressants (no data), were prepared. Thus, I (R = OMe) was prepared by the Grignard reaction of 4-BrC<sub>6</sub>H<sub>4</sub>OMe with II followed by the LiAlH<sub>4</sub> reduction of the resulting cyclohexadienone.

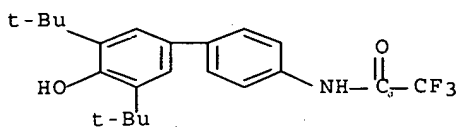
ED Entered STN: 12 May 1984

IT 72763-24-7P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

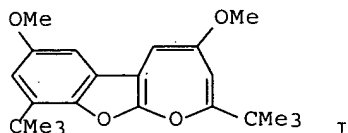
RN 72763-24-7 HCAPLUS

CN Acetamide, N-[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]-2,2,2-trifluoro- (9CI) (CA INDEX NAME)

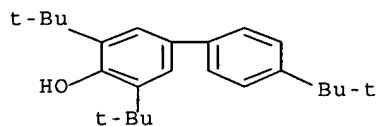


got it.

L104 ANSWER 14 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1978:443189 HCAPLUS Full-text  
 DOCUMENT NUMBER: 89:43189  
 TITLE: Oxidation of alkoxyphenols. XXI. Oxidative cross-coupling of phenols to unsymmetrical biphenyl-2,2'-diols  
 AUTHOR(S): Hewgill, F. Richmond; Howie, Graeme B.  
 CORPORATE SOURCE: Dep. Org. Chem., Univ. Western Australia, Nedlands, Australia  
 SOURCE: Australian Journal of Chemistry (1978), 31(5), 1061-8  
 CODEN: AJCHAS; ISSN: 0004-9425  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT '89:43189  
 GI



AB Oxidation of several binary mixts. of 4-substituted 2-tert-butylphenols by potassium ferricyanide gave unsym. biphenyl-2,2'-diol. Several new oxepino[2,3-b]benzofurans, e.g. I, were obtained by the oxidation  
 ED Entered STN: 12 May 1984  
 IT 6257-39-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation) (preparation of)  
 RN 6257-39-2 HCAPLUS  
 CN [1,1'-Biphenyl]-4-ol, 3,4',5-tris(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L104 ANSWER 15 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1977:585520 HCAPLUS Full-text  
 DOCUMENT NUMBER: 87:185520  
 TITLE: Light protecting agents  
 INVENTOR(S): Lind, Hanns  
 PATENT ASSIGNEE(S): Ciba-Geigy Corp., USA  
 SOURCE: U.S., 9 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4038250	A	19770726	US 1975-571142	19750424

PRIORITY APPLN. INFO.: US 1971-174951 A1 19710825

AB Substituted hydroxybenzoic acid substituted phenyl esters are compatible and effective light stabilizers for polyolefins. Thus, 39.4 g 3,5-di-tert-butyl-4-hydroxybenzoyl chloride and 26.8 g 4,6-di-tert-butyl-o-cresol were mixed in 50 mL dry pyridine and allowed to stand 12 h to give 2,4-di-tert-butyl-6-methylphenyl 3,5-di-tert-butyl-4-hydroxybenzoate (I) [35074-76-1]. Polypropylene [9003-07-0] 1000, com. hindered phenol aliphatic ester stabilizer 1, and I 2.5 parts were mixed and made into test strips. The strips required 1420 h exposure in a Xeno test apparatus for their tensile strength to drop to 30% of its original value, compared to 1060 with a com. stabilizer, and 420 with no stabilizer.

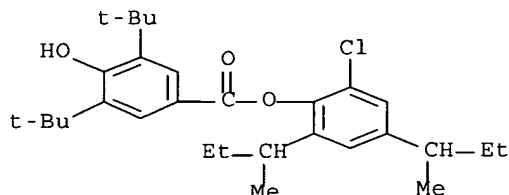
ED Entered STN: 12 May 1984

IT 38487-76-2 38487-79-5 38487-80-8  
 38542-63-1

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (light stabilizers, for polyolefins)

RN 38487-76-2 HCAPLUS

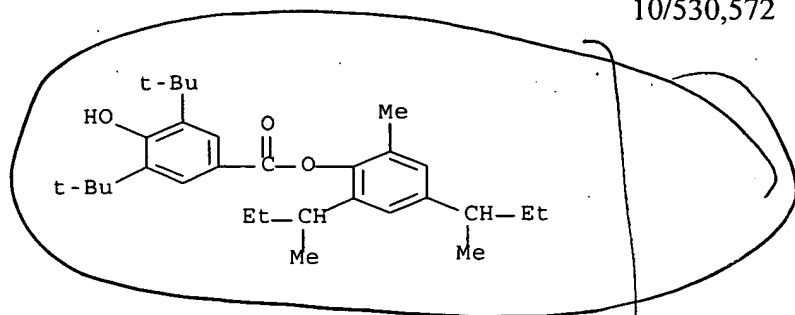
CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2-chloro-4,6-bis(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)



RN 38487-79-5 HCAPLUS

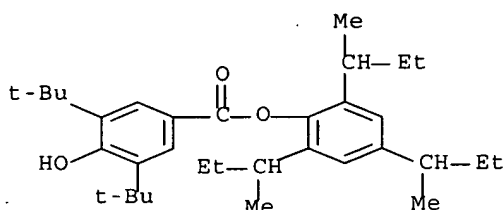
CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2-methyl-4,6-bis(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)





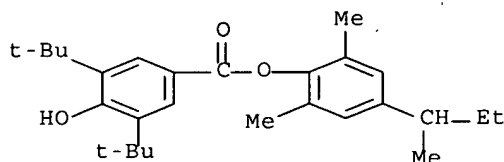
RN 38487-80-8 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,4,6-tris(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)



RN 38542-63-1 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,6-dimethyl-4-(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)



L104 ANSWER 16 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1977:56243 HCAPLUS Full-text

DOCUMENT NUMBER: 86:56243

TITLE: 4-Hydroxy biphenyl derivatives useful as stabilizers for organic materials

INVENTOR(S): Hofer, K.; Galt, E.; Tscheulin, G.

PATENT ASSIGNEE(S): Sandoz Ltd., Switz.

SOURCE: Belg., 27 pp. Addn. to Belg. 798,777.

CODEN: BEXXAL

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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10/530,572

January 3, 2007

BE 834906

A4 19760427

BE 1975-161283

19751027

CH 553181

A5 19761231

CH 1974-14474

19741029

FR 2289497

A2 19760528

FR 1975-33004

19751029

FR 2289497

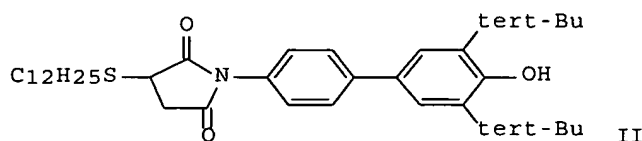
B2 19790713

PRIORITY APPLN. INFO.:

CH 1974-14474

A 19741029

GI



AB 3,5-Di-tert-butyl-4-hydroxy-4'-aminobiphenyl (I) [32559-12-9] was treated with substituted dicarboxylic acid anhydrides to give 4-hydroxybiphenyl derivs. useful as stabilizers against degradation by light, O, and heat, in polyolefins. Thus, 5.9 parts I was refluxed 2 hr with 6.0 parts (dodecylthio)succinic anhydride [5530-88-1] in a mixture of hydrocarbons b. 160-70° to give II [61193-02-0] m. 90-2°. Polypropylene [9003-07-0] powder was mixed with 0.4% II, pressed 5 min at 180°, and exposed to O at 190° and 20 mm. The oxidation level of the molding containing II was lower than that of unstabilized polymer.

ED Entered STN: 12 May 1984

IT 61192-94-7 61192-95-8 61192-96-9

61192-97-0 61192-98-1 61192-99-2

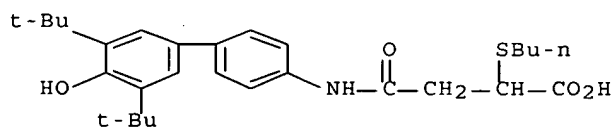
61258-76-2 61258-77-3

RL: USES (Uses)

(stabilizers)

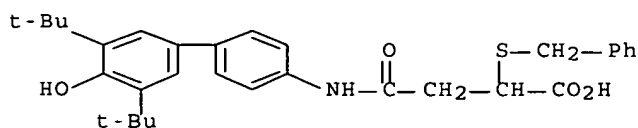
RN 61192-94-7 HCAPLUS

CN Butanoic acid, 4-[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-2-(butylthio)-4-oxo- (9CI) (CA INDEX NAME)



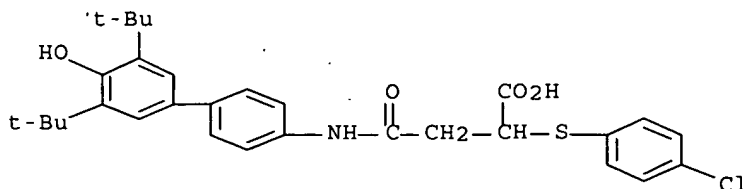
RN 61192-95-8 HCAPLUS

CN Butanoic acid, 4-[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-4-oxo-2-[(phenylmethyl)thio]- (9CI) (CA INDEX NAME)



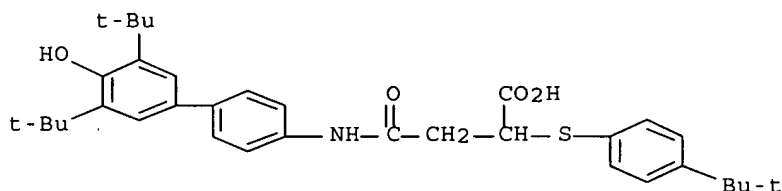
RN 61192-96-9 HCAPLUS

CN Butanoic acid, 4-[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-2-[(4-chlorophenyl)thio]-4-oxo- (9CI) (CA INDEX NAME)



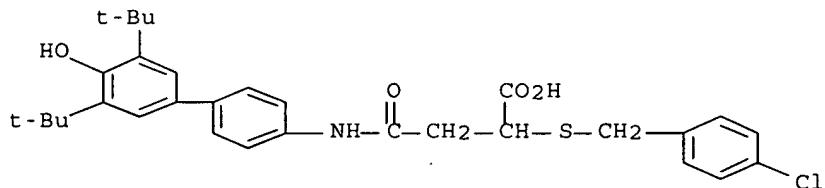
RN 61192-97-0 HCAPLUS

CN Butanoic acid, 4-[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-2-[[4-(1,1-dimethylethyl)phenyl]thio]-4-oxo- (9CI) (CA INDEX NAME)



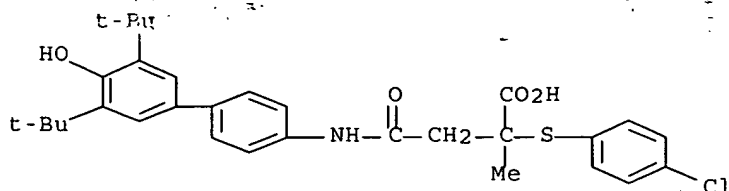
RN 61192-98-1 HCAPLUS

CN Butanoic acid, 4-[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-2-[[4-(4-chlorophenyl)methyl]thio]-4-oxo- (9CI) (CA INDEX NAME)



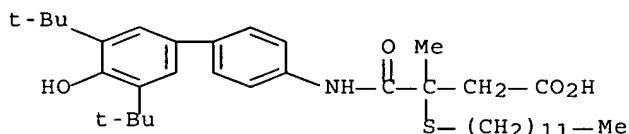
RN 61192-99-2 HCAPLUS

CN Butanoic acid, 4-[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-2-[(4-chlorophenyl)thio]-2-methyl-4-oxo- (9CI) (CA INDEX NAME)



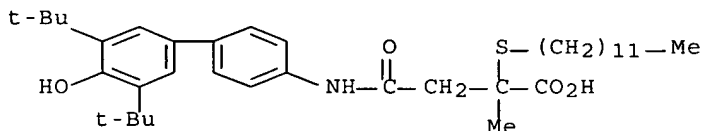
RN 61258-76-2 HCAPLUS

CN Butanoic acid, 4-[[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-3-(dodecylthio)-3-methyl-4-oxo- (9CI) (CA INDEX NAME)



RN 61258-77-3 HCAPLUS

CN Butanoic acid, 4-[[[3',5'-bis(1,1-dimethylethyl)-4'-hydroxy[1,1'-biphenyl]-4-yl]amino]-2-(dodecylthio)-2-methyl-4-oxo- (9CI) (CA INDEX NAME)



L104 ANSWER 17 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1976:406670 HCAPLUS Full-text

DOCUMENT NUMBER: 85:6670

TITLE: Compositions stabilized with polyol esters of benzoyloxybenzoic acids

INVENTOR(S): Spivack, John J.; Luzzi, John J.

PATENT ASSIGNEE(S): Ciba-Geigy Corp., USA

SOURCE: U.S., 7 pp. Division of U. S. 3,884,960.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

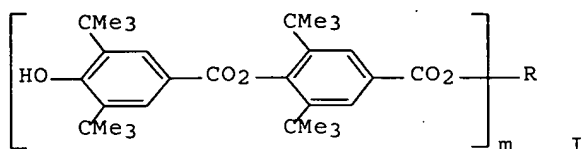
FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 3943102	A	19760309	US 1975-558983	19750317
US 3884960	A	19750520	US 1972-318326	19721226
FR 2211446	A1	19740719	FR 1973-45687	19731220
FR 2211446	B1	19780324		

NL 7317615	19740628	NL 1973-17615	19731221
JP 49101278	A 19740925	JP 1974-4557	19731221
IT 1000588	B 19760410	IT 1973-70809	19731221
CH 586250	A5 19770331	CH 1973-18043	19731221
ES 421758	A1 19770301	ES 1973-421758	19731224
GB 1415266	A 19751126	GB 1973-59772	19731227
PRIORITY APPLN. INFO.:		US 1972-318326	A3 19721226
		CH 1973-17555	A 19731215

GI



AB Esters (I, R = polyol residue, m = 2,3,4) were effective light stabilizers for synthetic fibers, polypropylene (II) [9003-07-0] film, polystyrene [9003-53-6], polyethylene [9002-88-4], SBR, or polyacetal resins. E.g. a film, produced by compression molding of powdered II containing 0.5% 2,2-dimethyl-1,3-propanediol bis[4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoate] [53606-84-1] and 0.2% di-n-octadecyl 3,5-di-tert-butyl-4-hydroxybenzylphosphonate (III) required 645 hr for development of 0.5 CO absorbance units in a standard test while I films containing only 0.2% III required 195 hr to reach the same level of oxidation. Similarly, II monofilaments stabilized with triethylene glycol bis[4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoate] [53606-83-0] and III retained their tenacity much longer during exposure to sunlight than II fibers stabilized with III only. The esters were synthesized from diols, triols or tetraols and 4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoyl chloride (IV) [53499-86-8] by refluxing in PhMe containing NEt<sub>3</sub>. IV was obtained by dimerizing 3,5-di-tert-butyl-4-hydroxybenzoyl chloride [40056-43-7] in PhMe containing NEt<sub>3</sub>.

ED Entered STN: 12 May 1984

IT 53606-84-1 53606-87-4

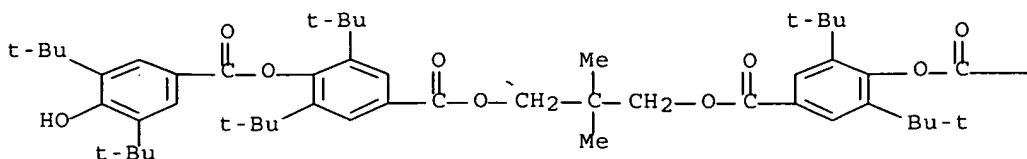
RL: USES (Uses)

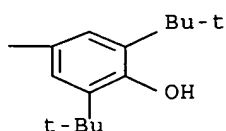
(light stabilizer, for synthetic fibers or plastics or SBR)

RN 53606-84-1 HCAPLUS

CN Benzoic acid, 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxybenzoyloxy]-3,5-bis(1,1-dimethylethyl)-, 2,2-dimethyl-1,3-propanediyl ester (9CI) (CA INDEX NAME)

PAGE 1-A

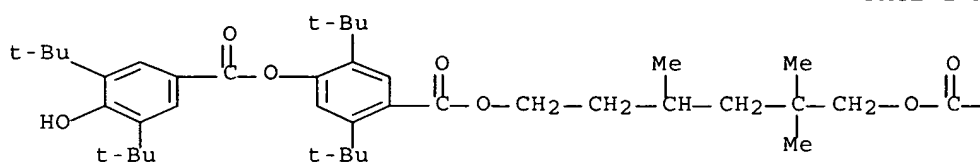




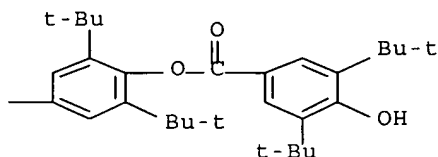
RN 53606-87-4 HCAPLUS

CN Benzoic acid, 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxybenzoyl]oxy]-3,5-bis(1,1-dimethylethyl)-, 2,2,4-trimethyl-1,6-hexanediyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L104 ANSWER 18 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1975:44351 HCAPLUS Full-text

DOCUMENT NUMBER: 82:44351

TITLE: Benzoyloxybenzoates

INVENTOR(S): Spivack, John D.; Luzzi, John J.

PATENT ASSIGNEE(S): Ciba-Geigy A.-G.

SOURCE: Ger. Offen., 23 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2364120	A1	19740627	DE 1973-2364120	19731221
US 3884960	A	19750520	US 1972-318326	19721226
FR 2211446	A1	19740719	FR 1973-45687	19731220
FR 2211446	B1	19780324		
NL 7317615	A	19740628	NL 1973-17615	19731221
JP 49101278	A	19740925	JP 1974-4557	19731221

IT 1000588	B	19760410	IT 1973-70809	19731221
CH 586250	A5	19770331	CH 1973-18043	19731221
ES 421758	A1	19770301	ES 1973-421758	19731224
GB 1415266	A	19751126	GB 1973-59772	19731227
PRIORITY APPLN. INFO.:			US 1972-318326	A 19721226
			CH 1973-17555	A 19731215

GI For diagram(s), see printed CA Issue.

AB 1,6-Hexanediol bis[4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoate] (I) [53606-82-9] and 8 similar esters of tetra-, tri-, and diols were useful as light stabilizers in polymers. Thus, a toluene solution of 107.2 g 3,5-di-tert-butyl-4-hydroxybenzoyl chloride [40056-43-7] was treated slowly with 24.4 g Et<sub>3</sub>N to prepare 70 g 4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoyl chloride [53499-86-8] which (10 g) was treated with 2.4 g 1,6-hexanediol [629-11-8] and 2.0g Et<sub>3</sub>N to prepare 9 g I. Polypropylene [9003-07-0] containing 0.5% I resisted degradation by sunlight approx. twice as long as polymer containing 0.1% Ca stearate and 0.2% dioctadecyl 3,5-di-tert-butyl-4-hydroxybenzylphosphonate.

ED Entered STN: 12 May 1984

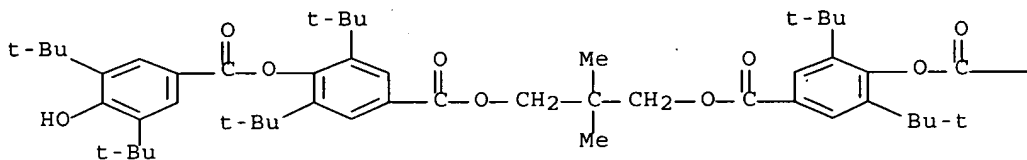
IT 53606-84-1 53606-87-4

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(light stabilizers, for polymers)

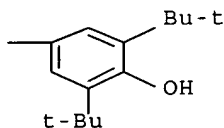
RN 53606-84-1 HCAPLUS

CN Benzoic acid, 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxybenzoyl]oxy]-3,5-bis(1,1-dimethylethyl)-, 2,2-dimethyl-1,3-propanediyl ester (9CI) (CA INDEX NAME)

PAGE 1-A



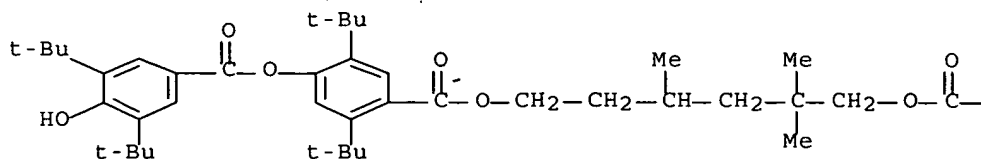
PAGE 1-B



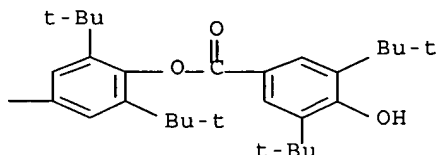
RN 53606-87-4 HCAPLUS

CN Benzoic acid, 4-[[3,5-bis(1,1-dimethylethyl)-4-hydroxybenzoyl]oxy]-3,5-bis(1,1-dimethylethyl)-, 2,2,4-trimethyl-1,6-hexanediyl ester (9CI) (CA INDEX NAME)

PAGE 1 A



PAGE 1-B



L104 ANSWER 19 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1975:44350 HCAPLUS Full-text  
 DOCUMENT NUMBER: 82:44350  
 TITLE: Benzoyloxybenzoates and compositions stabilized with them  
 INVENTOR(S): Spivack, John D.; Luzzi, John J.  
 PATENT ASSIGNEE(S): Ciba-Geigy A.-G.  
 SOURCE: Ger. Offen., 27 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 3  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2364123	A1	19740627	DE 1973-2364123	19731221
AU 7363297	A	19750612	AU 1973-63297	19731206
CH 586728	A5	19770415	CH 1973-17555	19731215
NL 7317422	A	19740628	NL 1973-17422	19731219
FR 2211445	A1	19740719	FR 1973-45685	19731220
AT 7310767	A	19750815	AT 1973-10767	19731221
AT 329878	B	19760610		
IT 1000599	B	19760410	IT 1973-70822	19731221
JP 49101276	A	19740925	JP 1974-4340	19731222
GB 1425390	A	19760218	GB 1973-59768	19731227
US 4051104	A	19770927	US 1975-563251	19750328
US 4120846	A	19781017	US 1977-835760	19770922
PRIORITY APPLN. INFO.:			US 1972-318324	A 19721226
			CH 1973-17555	A 19731215
			US 1975-563251	A3 19750328

GI For diagram(s), see printed CA Issue.

AB 2,4-Di-tert-butylphenyl 4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoate (I) [53606-90-9], octadecyl 4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoate [53606-96-5], and 11 similar esters were useful as light stabilizers in polymers. Thus, a toluene solution of 3,5-di-tert-butyl-4-hydroxybenzoyl chloride [40056-43-7] was treated slowly



with Et<sub>3</sub>N to prepare 4-(3,5-di-tert-butyl-4-hydroxybenzoyloxy)-3,5-di-tert-butylbenzoyl chloride [53499-66-8] which was treated with 2,4-di-tert-butylphenol [96-76-4] and Et<sub>3</sub>N to prepare I. Polypropene fibers containing 0.25% I resisted degradation by sunlight approx. twice as long as fibers containing 0.1% Ca stearate and 0.2% dioctadecyl 3,5-di-tert-butyl-4-hydroxybenzylphosphonate.

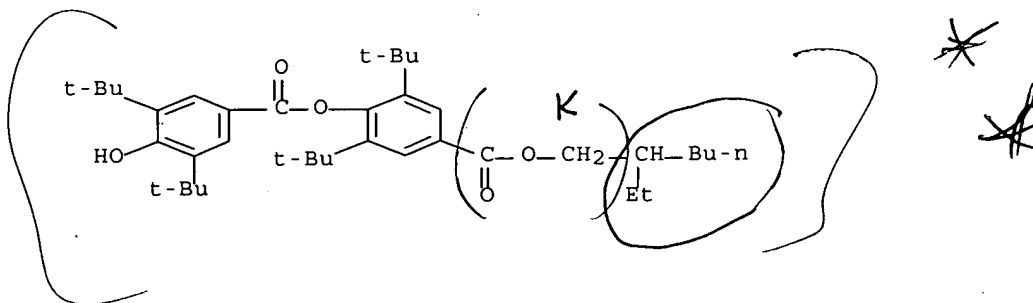
ED Entered STN: 12 May 1984

IT 53606-99-8

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(light stabilizers, for polymers)

RN 53606-99-8 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,6-bis(1,1-dimethylethyl)-4-[[[(2-ethylhexyl)oxy]carbonyl]phenyl ester (9CI) (CA INDEX NAME)



L104 ANSWER 20 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1972:420636 HCAPLUS Full-text

DOCUMENT NUMBER: 77:20636

TITLE: 4-Hydroxybenzoic acid aryl esters for protecting  
light-sensitive polyolefins

INVENTOR(S): Lind, Hanns

PATENT ASSIGNEE(S): Ciba-Geigy A.-G.

SOURCE: Ger. Offen., 30 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 2142679	A	19720309	DE 1971-2142679	19710825
CH 527873	A	19720915	CH 1970-527873	19700826
AU 7132559	A	19730222	AU 1971-32559	19710819
GB 1331353	A	19730926	GB 1971-39412	19710823
NL 7111710	A	19720229	NL 1971-11710	19710825
AT 307749	B	19730612	AT 1971-7427	19710825
ES 394501	A1	19740916	ES 1971-394501	19710825
FR 2106095	A5	19720428	FR 1971-31025	19710826

PRIORITY APPLN. INFO.: CH 1970-12750 A 19700826

AB Polypropylene (I) [9003-07-0] or polyethylene [9002-88-4] were light-stabilized by incorporating aromatic esters of hydroxybenzoic acids (II), where R<sub>1</sub> = alkyl, cycloalkyl, or aralkyl; R<sub>2</sub> = α-branched alkyl, cycloalkyl, or aralkyl; R<sub>3</sub> and R<sub>5</sub> are alkyl, cycloalkyl, aralkyl, Ph, or Cl; and R<sub>4</sub> = H, alkyl, cycloalkyl, aralkyl, Ph, or Cl. Thus, 2,4-di-tert-butyl-o-cresol was treated with 3,5-di-tert-butyl-4-hydroxybenzoyl chloride in pyridine to give 2-methyl-4,6-di-tert-butylphenyl 3,5-di-tert-butyl-4-hydroxybenzoate (II, R<sub>3</sub>

= Me, R1 = R2 = R4 = R5 = tert-Bu) (III) [35074-40-1], m.p. 173-4.deg.. Then, a mixture of I 1000, octadecyl  $\beta$ -(3,5-di-tert-butyl-4-hydroxyphenyl)propionate 1, and III 2.5 parts were mixed and granulated at 200.deg.. The mix was extruded to give a film which was tested in a Xeno 150 apparatus. The sample was exposed 1420 hr before the tenacity was lowered to 30% of the original. Numerous other examples of aromatic esters of hydroxybenzoic acids were given.

ED Entered STN: 12 May 1984

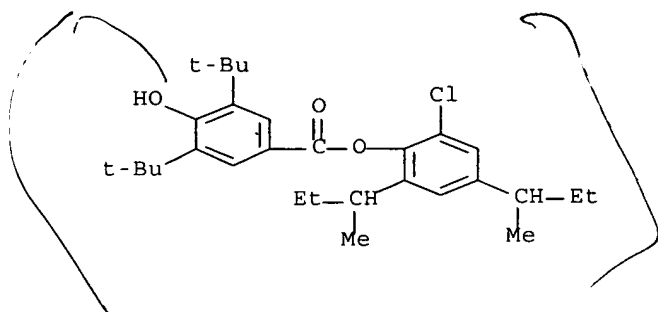
IT 38487-76-2 38487-79-5 38487-80-8

38542-63-1

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(light stabilizers, for polyolefins)

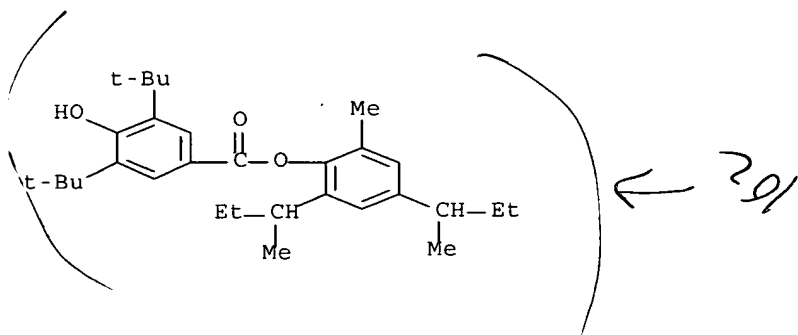
RN 38487-76-2 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2-chloro-4,6-bis(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)



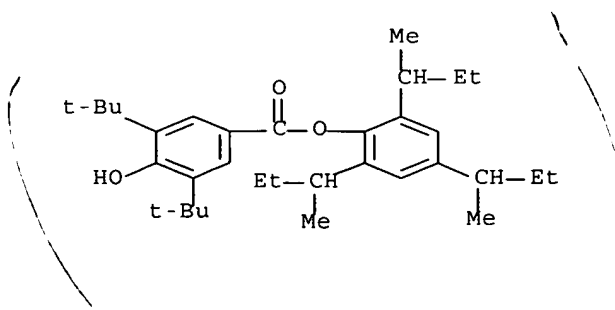
RN 38487-79-5 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2-methyl-4,6-bis(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)



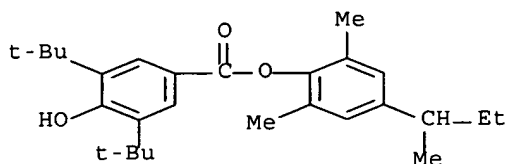
RN 38487-80-8 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,4,6-tris(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)



RN 38542-63-1 HCAPLUS

CN Benzoic acid, 3,5-bis(1,1-dimethylethyl)-4-hydroxy-, 2,6-dimethyl-4-(1-methylpropyl)phenyl ester (9CI) (CA INDEX NAME)



L104 ANSWER 21 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1968:467034 HCAPLUS Full-text

DOCUMENT NUMBER: 69:67034

TITLE: Arylation of aromatic hydrocarbons during thermal decomposition of 2,6-di-tert-butyl-p-benzoquinone diazide

AUTHOR(S): Nikiforov, G. A.; Plekhanova, L. G.; Ershov, V. V.; Rozenberg, A. N.; Bogdanov, G. N.; Prokof'ev, A. I.; Solodovnikov, S. P.

CORPORATE SOURCE: Inst. Khim. Fiz., Moscow, USSR

SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya (1968), (1), 204-6

CODEN: IASKA6; ISSN: 0002-3353

DOCUMENT TYPE: Journal

LANGUAGE: Russian

AB Heating 1 g. 2,6-di-tert-butyl-p-benzoquinone diazide in C<sub>6</sub>H<sub>6</sub> and 0.5 ml. absolute EtOH 2 hrs. under argon atmospheric gave after evaporation and separation on Al<sub>2</sub>O<sub>3</sub> thin layer 76% 4-phenyl-2,6-di-tert-butylphenol, m. 100-1°; similarly were obtained 4-R-substituted 2,6-di-tert-butylphenols (R shown) by thermolysis of the diazide in appropriate aromatic solvents: MeC<sub>6</sub>H<sub>4</sub>, m. 120-1°; EtC<sub>6</sub>H<sub>4</sub>, m. 124-5°; iso-PrC<sub>6</sub>H<sub>4</sub>, m. 104-5°; Me<sub>3</sub>CC<sub>6</sub>H<sub>4</sub>, m. 131-2°, MeOC<sub>6</sub>H<sub>4</sub>, m. 105-6°; PhOC<sub>6</sub>H<sub>4</sub>, m. 152-3°; ClC<sub>6</sub>H<sub>4</sub> (I), m. 140-1°; Et<sub>2</sub>NC<sub>6</sub>H<sub>4</sub>, m. 117-18°; Ac-C<sub>6</sub>H<sub>4</sub>, m. 137-8°; OHCC<sub>6</sub>H<sub>4</sub>, m. 100-1°. The yields were 16 (Cl)-76(H)%. Treating 11 g. 2,6-di-tert-butyl-p-benzoquinone with p-ClC<sub>6</sub>H<sub>4</sub>HgBr from 9.4 g. RBr in Et<sub>2</sub>O gave 4-p-chlorophenyl-2,6-di-tert-butylquinol, m. 125-7°. This and LiAlH<sub>4</sub> in Et<sub>2</sub>O 1 day gave 4-p-chlorophenyl-2,6-di-tert-butylphenol, 85%, m. 140-1°, identical with I above. The addition of about 1% absolute EtOH to the reaction mixture appeared to be necessary for promoting proton transfer in conversion of intermediate cyclohexadienone into the aromatic biphenyl system. The individuality of the products was confirmed by chromatog. and uv spectra along with ir spectra showed the presence of hindered HO groups in all. The E.P.R spectra of free radicals formed from the above phenols showed their para structures.

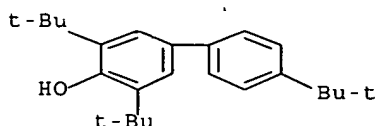
ED Entered STN: 12 May 1984

IT 6257-39-2P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

RN 6257-39-2 HCAPLUS

CN [1,1'-Biphenyl]-4-ol, 3,4',5-tris(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L104 ANSWER 22 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1966:35203 HCAPLUS Full-text

DOCUMENT NUMBER: 64:35203

ORIGINAL REFERENCE NO.: 64:6456h,6457a-f

TITLE: Spin density distribution in radicals. III.  
Participation of phenyl groups in the aroxyl  
mesomerism

AUTHOR(S): Rieker, Anton; Scheffler, Klaus

CORPORATE SOURCE: Univ. Tuebingen, Germany

SOURCE: Justus Liebigs Annalen der Chemie (1965), 689, 78-92

CODEN: JLACBF; ISSN: 0075-4617

DOCUMENT TYPE: Journal

LANGUAGE: German

GI For diagram(s), see printed CA Issue.

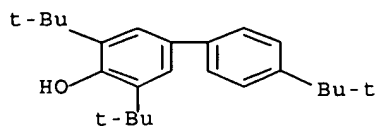
AB cf. CA 63, 5497e. An E.S.R. investigation was made on 15 different types of substituted 2,6-di-tert-butyl-4-phenylphenoxyls, whose synthesis is described. The results indicated that the stabilizing effect of a 4-Ph group and of a 4-tert-Bu group on the 2,6-di-tert-butylphenoxyl system and the influence of the free spin density distribution by these groups was of the same order of magnitude. The sum of the spin density values in the 4-Ph ring was estimated to be .apprx.7%. Thereby, the coupling parameters of the protons on C-atoms 3,5,-2',4', and 6' in one and the same compound were identical within the accuracy of the measurement. Different types of substitution of the 4-Ph ring (Br, Ph, Me, Me3C, OMe) changed this symmetry only immaterially. The appropriate quinol (I) (CA 63, 16231c) (.apprx.2.0 g.) in 30-40 cc. MeOH containing 2 g. Zn dust treated dropwise slowly with 10-20 cc. concentrated HCl (exothermic reaction) and cooled deposited crystalline II; when II remained oily, they were isolated with Et2O and recrystd. from MeOH or petroleum ether (p.e.). The II listed in the table were prepared. The constitution of the II was determined by analysis and ir spectroscopy. R1, R2, R3, R4, R5, R6, % yield, M.p.; H, H, H, H, H, H, 91, 100-1° (MeOH-p.e.); D, H, H, H, H, H, --, 100-1° (MeOH-p.e.); H, D, D, D, D, D, 92, 100-1° (MeOH-p.e.); H, H, H, Ph, H, H, 58, 150-2° (MeOH-C6H6); H, Me, H, H, H, H, 95, 85-7° (MeOH-p.e.); H, H, Me, H, H, H, 89, 107-8° (p.e.); H, H, H, Me, H, H, 90, 118-20° (MeOH-p.e.); H, H, H, CMe3, H, H, 92, 130-1.5° (MeOH-p.e.); H, Me, H, H, OMe, H, 47, 118-20° (p.e.-MeOH); H, Me, H, Me, H, Me, 96, 153-5° (MeOH); H, OMe, H, H, H, H, 74, 107-8.5° (MeOH-p.e.); H, H, OMe, H, H, H, 81, 99-100° (p.e.); H, H, H, OMe, H, H (III), 80, 102-3.5° (MeOH-p.e.); H, H, H, H, CH:CHCH:CH, 93, 107-8° (p.e.); H, H, H, Br, H, H, --, 137.5-9.0° (MeOH); In addition the constitution of III and its quinol precursor (IV) was determined by treatment with HI. IV (772 mg.), 0.3 cc. Ac2O, 20 mg. red P, and 3 cc. 70% HI refluxed 2 hrs. and poured into H2O and the product repptd. from 2N NaOH with 2N HCl gave 175 mg. (C6H4OH-4)2 (V), m. 260-5° (AcOH). Similar treatment of III gave .apprx.70% V, m. 265-70° (prior sintering). Aroxyl (VI) solns. for E.S.R. measurements were prepared by oxidation of II in E.S.R. tubes with PbO2 with rigorous exclusion of air. C6H6, cyclohexane, p.e., methylcyclohexane, Et2O, and EtOH served as solvents. The temperature of the measurements was varied from 80° to -130°. The results were tabulated.

ED Entered STN: 22 Apr 2001

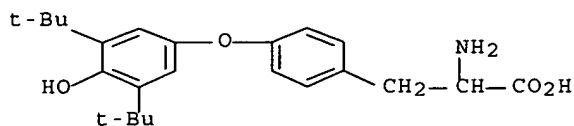
IT 6257-39-2P, Phenol, 2,6-di-tert-butyl-4-(p-tert-butylphenyl)-

RL: PREP (Preparation)

(preparation of)  
 RN 6257-39-2 HCAPLUS  
 CN [1,1'-Biphenyl]-4-ol, 3,4',5-tris(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

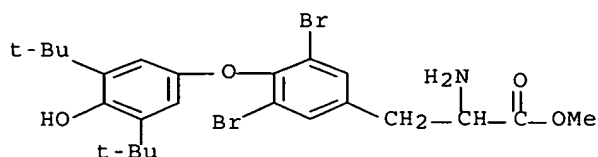


L104 ANSWER 23 OF 24 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1962:482903 HCAPLUS Full-text  
 DOCUMENT NUMBER: 57:82903  
 ORIGINAL REFERENCE NO.: 57:16460d-f  
 TITLE: Model reactions for the biosynthesis of thyroxine. IV. Synthesis of analogs of thyroxine from derivatives of tyrosine and of dibromotyrosine  
 AUTHOR(S): Matsuura, Teruo; Nishinaga, Akira  
 CORPORATE SOURCE: Osaka City Univ.  
 SOURCE: Journal of Organic Chemistry (1962), 27, 3072-5  
 CODEN: JOCEAH; ISSN: 0022-3263  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Unavailable  
 OTHER SOURCE(S): CASREACT 57:82903  
 GI For diagram(s), see printed CA Issue.  
 AB cf. J. Am. Chemical Society 82, 2055(1960); CA 55, 23629c. Derivs. of tyrosine and of dibromotyrosine react with the free radical 2,4,6-tri-tert-butylphenoxy to form quinol ethers I that can be converted to the corresponding di-tert-butyl analogs II of thyroxine. This sequence of reactions represents a nonenzymic model for the conversion of diiodotyrosine to thyroxine in vivo.  
 ED Entered STN: 22 Apr 2001  
 IT 95293-04-2P, Alanine, 3-[p-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]- 95819-74-2P, Alanine, 3-[3,5-dibromo-4-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]-, methyl ester 95944-12-0P, Alanine, N-acetyl-3-[3,5-dibromo-4-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]- 96309-40-9P, Alanine, 3-[3,5-dibromo-4-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]- 98422-92-5P, Alanine, N-acetyl-3-[p-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]-  
 RL: PREP (Preparation)  
 (preparation of)  
 RN 95293-04-2 HCAPLUS  
 CN Alanine, 3-[p-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]- (7CI) (CA INDEX NAME)



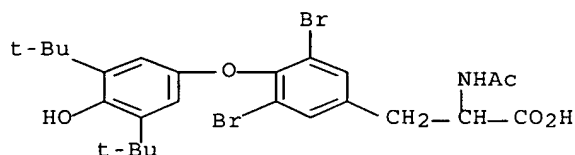
RN 95819-74-2 HCAPLUS

CN Alanine, 3-[3,5-dibromo-4-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]-, methyl ester (7CI) (CA INDEX NAME)



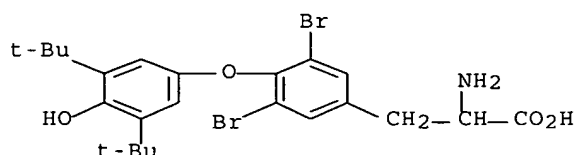
RN 95944-12-0 HCAPLUS

CN Alanine, N-acetyl-3-[3,5-dibromo-4-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]- (7CI) (CA INDEX NAME)



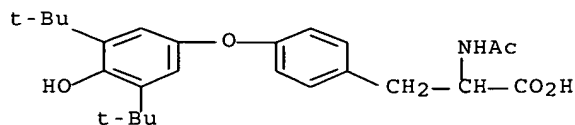
RN 96309-40-9 HCAPLUS

CN Alanine, 3-[3,5-dibromo-4-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]- (7CI) (CA INDEX NAME)



RN 98422-92-5 HCAPLUS

CN Alanine, N-acetyl-3-[p-(3,5-di-tert-butyl-4-hydroxyphenoxy)phenyl]- (7CI) (CA INDEX NAME)



DOCUMENT NUMBER: 54:110352  
 ORIGINAL REFERENCE NO.: 54:20989b-c  
 TITLE: tert-Butyl-p-phenylphenols  
 INVENTOR(S): Preston, Robert W. G.  
 PATENT ASSIGNEE(S): Imperial Chemical Industries Ltd.  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Unavailable  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 833022		19600421	GB 1957-6857	19570301
DE 1114823			DE	
US 2990428		19610627	US 1958-716893	19580224

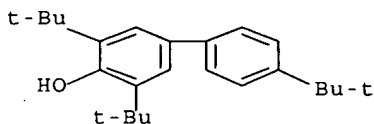
AB The title compds. were useful as antioxidants for fats, fatty oils, and soaps. p-Phenylphenol (I) (170 g.) was dissolved in 750 g. 3,5-dimethylphenol, 17 g. 20% oleum added, 130 g. isobutene (II) passed in at 80°, the mixture dissolved in 500 ml. benzene, washed with 10% aqueous NaOH, then water, the organic layer dried and distilled to give 53% 2-tert-butyl-p-phenylphenol (III), b6 189-90°, m. 40-2°. I (170 g.) and 237 g. II gave 92 g. III and 69 g. 2,4'-di-tert-butyl-p-phenylphenol (IV), b5 221-6°, m. 120-2°. I (113 g.), 5.7 g. 20% oleum, and 120 g. II kept at 120° gave 81 g. IV and 65 g. 2,6,4'-tri-tert-butyl-p-phenylphenol, m. 134°.

ED Entered STN: 22 Apr 2001

IT 6257-39-2P, Phenol, 2,6-di-tert-butyl-4-(p-tert-butylphenyl) -  
 RL: PREP (Preparation)  
 (preparation of)

RN 6257-39-2 HCAPLUS

CN [1,1'-Biphenyl]-4-ol, 3,4',5-tris(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



## HISTORY

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(FILE 'HOME' ENTERED AT 15:53:28 ON 29 DEC 2006)

FILE 'HCAPLUS' ENTERED AT 15:53:38 ON 29 DEC 2006

E US2005-530572/APPS

L1 1 SEA ABB=ON PLU=ON US2005-530572/AP  
SEL RN

FILE 'REGISTRY' ENTERED AT 15:53:52 ON 29 DEC 2006

L2 21 SEA ABB=ON PLU=ON (102714-93-2/BI OR 104197-13-9/BI OR  
106349-49-9/BI OR 1139-52-2/BI OR 121-43-7/BI OR 121219-85-0/BI  
OR 133914-49-5/BI OR 133937-72-1/BI OR 135734-59-7/BI OR  
135734-60-0/BI OR 137528-82-6/BI OR 137528-84-8/BI OR 153429-47  
-1/BI OR 6169-06-8/BI OR 679436-57-8/BI OR 679436-58-9/BI OR  
679436-59-0/BI OR 76802-59-0/BI OR 76802-61-4/BI OR 81711-13-9/  
BI OR 84816-56-8/BI)

FILE 'HCAPLUS' ENTERED AT 15:56:37 ON 29 DEC 2006

L3 1 SEA ABB=ON PLU=ON L1 AND L2  
D IALL HITSTR

FILE 'REGISTRY' ENTERED AT 15:57:42 ON 29 DEC 2006

E PHENOL/CN

L4 1 SEA ABB=ON PLU=ON PHENOL/CN  
D SCA

L5 STR

L6 50 SEA SSS SAM L5

L7 STR L5

L8 50 SEA SSS SAM L7

L9 STR L7

L10 50 SEA SSS SAM L9

L11 STR

L12 0 SEA SSS SAM L11

L13 STR L11

L14 0 SEA SSS SAM L13

L15 2 SEA SSS FUL L13

L16 2 SEA ABB=ON PLU=ON L15/COM  
D SCA

L17 0 SEA ABB=ON PLU=ON L2 AND L16  
D QUE L13

L18 STR L13

L19 50 SEA SSS SAM L18

L20 STR L18

L21 16 SEA SSS SAM L20

L22 377 SEA SSS FUL L20

FILE 'HCAPLUS' ENTERED AT 16:58:36 ON 29 DEC 2006

L23 576 SEA ABB=ON PLU=ON L22

FILE 'REGISTRY' ENTERED AT 16:58:51 ON 29 DEC 2006

L24 1 SEA ABB=ON PLU=ON L22 AND L2  
D SCA

SAV TEMP L24CHO572/A L24

L25 STR

L26 50 SEA SSS SAM L25

L27 3 SEA SUB=L22 SSS SAM L25



L28 76 SEA SUB=L22 SSS FUL L25  
 FILE 'HCAPLUS' ENTERED AT 17:11:37 ON 29 DEC 2006  
 L29 409 SEA ABB=ON PLU=ON L28  
 FILE 'REGISTRY' ENTERED AT 17:11:44 ON 29 DEC 2006  
 L30 1 SEA ABB=ON PLU=ON L28 AND C28H38O5/MF  
 FILE 'HCAPLUS' ENTERED AT 17:12:51 ON 29 DEC 2006  
 L31 ANALYZE PLU=ON L29 1-409 RN : 4553 TERMS  
 D  
 FILE 'REGISTRY' ENTERED AT 17:13:18 ON 29 DEC 2006  
 L32 0 SEA ABB=ON PLU=ON 4221-80-1D SCA  
 L33 1 SEA ABB=ON PLU=ON 4221-80-1  
 D SCA  
 L34 75 SEA ABB=ON PLU=ON L28 NOT L33  
 FILE 'HCAPLUS' ENTERED AT 17:13:44 ON 29 DEC 2006  
 L35 127 SEA ABB=ON PLU=ON L34  
 L36 ANALYZE PLU=ON L35 1-127 RN : 2620 TERMS  
 D  
 FILE 'REGISTRY' ENTERED AT 17:14:05 ON 29 DEC 2006  
 L37 1 SEA ABB=ON PLU=ON 35439-93-1  
 D SCA  
 L38 74 SEA ABB=ON PLU=ON L34 NOT L37  
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 L39 59 SEA ABB=ON PLU=ON L38  
 L40 ANALYZE PLU=ON L39 1-59 RN : 1857 TERMS  
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 L41 1 SEA ABB=ON PLU=ON 9003-07-0  
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 L42 1 SEA ABB=ON PLU=ON L38 AND C57H77NO8/MF  
 L43 73 SEA ABB=ON PLU=ON L38 NOT L42  
 L44 72 SEA ABB=ON PLU=ON L43 NOT C25H26N2O3  
 L45 1 SEA ABB=ON PLU=ON L43 AND C25H26N2O3/MF  
 L46 72 SEA ABB=ON PLU=ON L43 NOT L45  
 L47 1 SEA ABB=ON PLU=ON L46 AND C47H71NO3/MF  
 L48 71 SEA ABB=ON PLU=ON L46 NOT L47  
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 D SCA  
 L50 70 SEA ABB=ON PLU=ON L48 NOT L49  
 L51 4 SEA ABB=ON PLU=ON L50 AND C29H42O3/MF  
 D SCA  
 L52 66 SEA ABB=ON PLU=ON L50 NOT L51  
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 D SCA  
 L55 64 SEA ABB=ON PLU=ON L52 NOT L54  
 L56 1 SEA ABB=ON PLU=ON L55 AND C38H59NO4/MF  
 L57 63 SEA ABB=ON PLU=ON L55 NOT L56  
 L58 1 SEA ABB=ON PLU=ON L57 AND NI/ELS  
 D SCA  
 L59 62 SEA ABB=ON PLU=ON L57 NOT L58  
 L60 1 SEA ABB=ON PLU=ON L59 AND IDS/CI  
 D SCA

10/530,572

January 3, 2007

L61 61 SEA ABB=ON PLU=ON L59 NOT L60  
 L62 3 SEA ABB=ON PLU=ON L61 AND C31H46O3/MF  
 D SCA  
 L63 58 SEA ABB=ON PLU=ON L61 NOT L62  
 L64 1 SEA ABB=ON PLU=ON L63 AND C35H52O5/MF  
 L65 57 SEA ABB=ON PLU=ON L63 NOT L64  
 L66 1 SEA ABB=ON PLU=ON L65 AND C26H36O3/MF  
 L67 56 SEA ABB=ON PLU=ON L65 NOT L66  
 L68 5 SEA ABB=ON PLU=ON L67 AND C30H44O3/MF  
 D SCA  
 E BENZOIC ACID, 3,5-BIS(1,1-DIMETHYLETHYL)-4-HYDROXY-, 2-METHYL  
 L69 1 SEA ABB=ON PLU=ON "BENZOIC ACID, 3,5-BIS(1,1-DIMETHYLETHYL)-4  
 -HYDROXY-, 2-METHYL-4,6-BIS(1-METHYLPROPYL) PHENYL ESTER"/CN  
 L70 51 SEA ABB=ON PLU=ON L67 NOT L68  
 L71 52 SEA ABB=ON PLU=ON L69 OR L70  
 L72 3 SEA ABB=ON PLU=ON L52 AND C>90  
 D SCA  
 L73 49 SEA ABB=ON PLU=ON L71 NOT L72  
 L74 3 SEA ABB=ON PLU=ON L73 AND C33H50O3/MF  
 D SCA  
 E BENZOIC ACID, 3,5-BIS(1,1-DIMETHYLETHYL)-4-HYDROXY-, 2,4,6-TR  
 L75 1 SEA ABB=ON PLU=ON "BENZOIC ACID, 3,5-BIS(1,1-DIMETHYLETHYL)-4  
 -HYDROXY-, 2,4,6-TRIS(1-METHYLPROPYL) PHENYL ESTER"/CN  
 L76 46 SEA ABB=ON PLU=ON L73 NOT L74  
 L77 47 SEA ABB=ON PLU=ON L75 OR L76  
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 L79 46 SEA ABB=ON PLU=ON L77 NOT L78  
 L80 1 SEA ABB=ON PLU=ON L79 AND C24H26F3NO/MF  
 L81 45 SEA ABB=ON PLU=ON L79 NOT L80  
 L82 1 SEA ABB=ON PLU=ON L81 AND C24H26F3NO2/MF  
 L83 44 SEA ABB=ON PLU=ON L81 NOT L82  
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 L87 42 SEA ABB=ON PLU=ON L85 NOT L86  
 L88 1 SEA ABB=ON PLU=ON L87 AND MN/ELS  
 L89 41 SEA ABB=ON PLU=ON L87 NOT L88  
 L90 1 SEA ABB=ON PLU=ON L89 AND C24H34O2/MF  
 L91 40 SEA ABB=ON PLU=ON L89 NOT L90  
 L92 1 SEA ABB=ON PLU=ON L91 AND C28H42O2/MF  
 L93 39 SEA ABB=ON PLU=ON L91 NOT L92  
 L94 2 SEA ABB=ON PLU=ON L93 AND TI/ELS  
 D SCA  
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 L96 1 SEA ABB=ON PLU=ON L95 AND C28H38O5/MF  
 L97 36 SEA ABB=ON PLU=ON L95 NOT L96  
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 L99 35 SEA ABB=ON PLU=ON L97 NOT L98  
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 L101 2 SEA ABB=ON PLU=ON L99 AND C27H38O3/MF  
 D SCA  
 E BENZOIC ACID, 3,5-BIS(1,1-DIMETHYLETHYL)-4-HYDROXY-, 2,6-DIME  
 L102 1 SEA ABB=ON PLU=ON "BENZOIC ACID, 3,5-BIS(1,1-DIMETHYLETHYL)-4  
 -HYDROXY-, 2,6-DIMETHYL-4-(1-METHYLPROPYL) PHENYL ESTER"/CN  
 L103 34 SEA ABB=ON PLU=ON L102 OR L100

FILE 'HCAPLUS' ENTERED AT 17:34:44 ON 29 DEC 2006

L104 24 SEA ABB=ON PLU=ON L103

10/530,572

January 3, 2007

FILE 'HCAPLUS' ENTERED-AT 17:35:03 ON 29 DEC 2006

SEARCHED BY

AD

WORDLIST

D QUE L104

D:L104 IBIB ABS ED HITSTR TOT

## INVENTOR SEARCH

=&gt; d his

(FILE 'HOME' ENTERED AT 10:17:16 ON 03 JAN 2007)

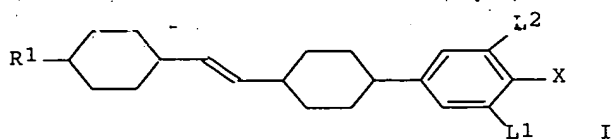
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L1           E REIFFENRATH V/AU  
           476 S E3-4  
           E HECKMEIER M/AU  
 L2           292 S E3-5  
 L3           46 S L1 AND L2  
 L4           113 S L1-2 AND CHIRAL  
 L5           30 S L1-2 AND PHENOL  
 L6           8 S L4 AND L5  
 L7           52 S L3 OR L6  
 L8           35 DUP REM L7 (17 DUPLICATES REMOVED)

=&gt; d l8 bib abs tot

L8   ANSWER 1 OF 35   HCAPLUS   COPYRIGHT 2007 ACS on STN DUPLICATE 1  
 AN   2004:1037203   HCAPLUS   Full-text  
 DN   142:13838  
 TI   Liquid-crystalline medium showing improved physical properties for liquid  
      crystal display  
 IN   Heckmeier, Michael; Reiffenrath, Volker; Saito, Izumi  
 PA   Merck Patent G.m.b.H., Germany  
 SO   PCT Int. Appl., 96 pp.  
      CODEN: PIXXD2  
 DT   Patent  
 LA   German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004104137	A1	20041202	WO 2004-EP5234	20040514
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 102004024456	A1	20041209	DE 2004-102004024456	20040514
	EP 1629064	A1	20060301	EP 2004-739214	20040514
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
	CN 1791659	A	20060621	CN 2004-80013856	20040514
PRAI	DE 2003-10322908	A	20030521		
	WO 2004-EP5234	W	20040514		
OS	MARPAT 142:13838				
GI					



AB The invention relates to a liquid-crystalline medium based on a mixture of polar compds. Said medium is characterized in that it contains one or more compds. of formula I (R1 = halo, C1-15-alkoxy; X = F, Cl, CN, C1-6-haloalkyl, haloalkenyl, haloalkoxy, haloalkenyl; L1, L2 = H, F). The invention also relates to the use of said compds. for electro-optical purposes, in particular TN monitor applications. There are 26 mixture examples.

RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 2 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 2

AN 2004:992647 HCAPLUS Full-text

DN 141:429739

TI Nematic liquid crystal mixture showing improved physical properties for liquid crystal display

IN Heckmeier, Michael; Poetsch, Eike; Reiffenrath, Volker

PA Merck Patent GmbH, Germany

SO Ger. Offen., 35 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 102004019901	A1	20041118	DE 2004-102004019901	20040421
PRAI	DE 2003-10318362	IA	20030423		

OS MARPAT 141:429739

AB The title liquid crystal mixture comprises (a) 20-80 % of liquid crystal compds. having optical birefringence of  $\Delta n \leq 0.08$  and dielec. anisotropy of  $\Delta \epsilon \geq 11$ , (b) 15-60 % of liquid crystal compds. having optical birefringence of  $\Delta n \geq 0.12$  and dielec. anisotropy of  $\Delta \epsilon \geq 15$ , (c) 5-45 % of liquid crystal compds. with dielec. anisotropy  $\Delta \epsilon$  of -1.5 to 2, and (d) 0-40 % of other liquid crystal compds.

L8 ANSWER 3 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 3

AN 2004:962836 HCAPLUS Full-text

DN 141:403630

TI Liquid crystal mixture showing improved physical properties suitable for liquid crystal display

IN Heckmeier, Michael; Reiffenrath, Volker; Poetsch, Eike

PA Merck Patent GmbH, Germany

SO Ger. Offen., 21 pp.

CODEN: GWXXBX

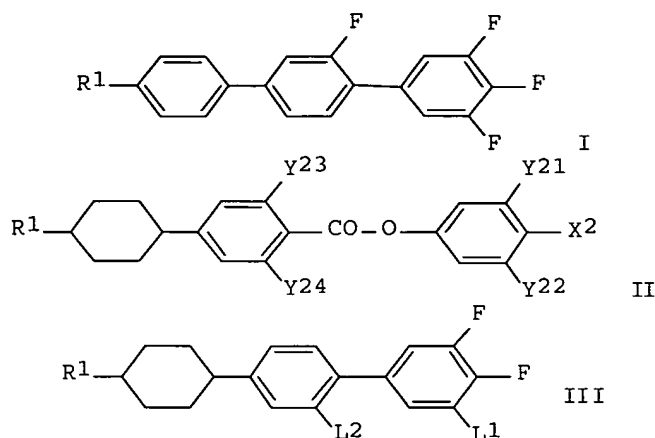
DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 102004015200	A1	20041111	DE 2004-102004015200	20040329

PRAI DE 2003-10318361 IA 20030423  
 OS MARPAT 141:403830  
 GI



AB The title liquid crystal mixture comprises (a) 15-50 % of one or more liquid crystal compds. represented by I [R1 = C1-7-alkyl], (b) 5-30 % of one or more liquid crystal compds. represented by II [R1 = C1-7-alkyl; X2 = F, Cl, -OCF2; Y21-24 = H, F], (c) 3-35 % of one or more liquid crystal compds. represented by III [R1 = C1-7-alkyl; L1, L2 = H, F], (d) 2-20 % of one or more specific liquid crystal compds. [2 Markush structures are given], (e) 10-45 % of one or more specific liquid crystal compds. [3 Markush structures are given], (f) 0-15 % of one or more specific liquid crystal compds. [1 Markush structure is given], and (g) 0-15 % of one or more specific liquid crystal compds. [1 Markush structure is given]. There are 17 nematic liquid crystal mixture examples.

L8 ANSWER 4 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 4

AN 2004:898429 HCAPLUS Full-text

DN 141:372899

TI Liquid crystalline medium with UV stabilizer for TN-, STN-, TN-TFT-, IPS- or VA-liquid crystal display

IN *Heckmeier, Michael; Reiffenrath, Volker*

PA Merck Patent GmbH, Germany

SO Ger. Offen., 51 pp.

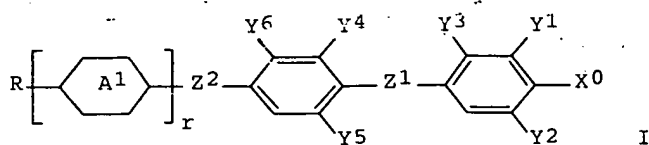
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 102004012970	A1	20041028	DE 2004-102004012970	20040317
	JP 2004315819	A	20041111	JP 2004-114914	20040409
PRAI	DE 2003-10316813	IA	20030411		
OS	MARPAT 141:372899				
GI					



AB The title liquid crystalline medium is based on a pos. anisotropic polar compound mixture, wherein the medium contains one or more compounds represented by I (R = C1-15-alkyl, alkenyl; A1 = 1,4-phenylene with F-substituent(s), trans-1,4-cyclohexylene, etc.; Y1-6 = H, F; Z1 = -CF2O-, -OCF2-, -COO-; Z2 = -O-, -S-, -CO-, -OCO-, etc.; X0 = F, C, C1-6-halogenated alkyl, alkenyl, alkoxy; r = 0, 1) and one or more UV-stabilizers. There are 3 mixture examples.

L8 ANSWER 5 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 5

AN 2004:177986 HCAPLUS Full-text

DN 140:225896

TI Liquid crystal mixture suitable for liquid crystal display

IN Heckmeier, Michael; Poetsch, Eike; Reiffenrath, Volker

PA Merck K.-G.a.A., Germany

SO Ger. Offen., 57 pp.

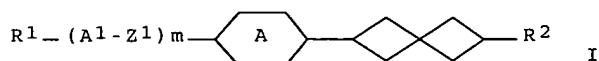
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10338111	A1	20040304	DE 2003-10338111	20030815
	WO 2004026991	A1	20040401	WO 2003-EP8989	20030813
	WO 2004026991	A9	20040916		
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003255437	A1	20040408	AU 2003-255437	20030813
PRAI	DE 2002-10239021	IA	20020820		
	WO 2003-EP8989	W	20030813		
OS	MARPAT 140:225896				
GI					



AB The title liquid crystal mixture is based on polar compds. having pos. or neg. dielec. anisotropy, wherein the mixture contains one or more compds. represented by I (R1 = C1-15-alkyl, alkenyl, etc.; A1 = 1,4-cyclohexenylene, 1,4-cyclohexylene, etc.; A = 1,4-trans-cyclohexylene, etc.; Z1 = -COO-, -OCO-, etc.; R2 = C2-7-alkenyl; m = 0-2). The mixture shows excellent phys. properties suitable for the liquid crystal display.

L8 ANSWER 6 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 6

AN 2004:367211 HCAPLUS Full-text

DN 140:383193

TI Chiral dopant with laterally alkylated phenyl structure for liquid crystal mixture in liquid crystal display

IN *Reiffenrath, Volker; Heckmeier, Michael*

PA Merck Patent GmbH, Germany

SO Ger. Offen., 31 pp.

CODEN: GWXXBX

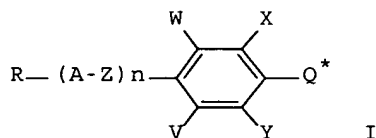
DT Patent

LA German

FAN.CNT 1

ODP?

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10248765	A1	20040506	DE 2002-10248765	20021018
	WO 2004037948	A1	20040506	WO 2003-EP10547	20030923
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003270243	A1	20040513	AU 2003-270243	20030923
	EP 1551938	A1	20050713	EP 2003-750601	20030923
	EP 1551938	B1	20060705		
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2006503100	T	20060126	JP 2004-545778	20030923
	AT 332349	T	20060715	AT 2003-750601	20030923
	US 2006081813	A1	20060420	US 2005-531375	20050415
PRAI	DE 2002-10248765	A	20021018		
	WO 2003-EP10547	W	20030923		
OS	MARPAT 140:383193				
GI					



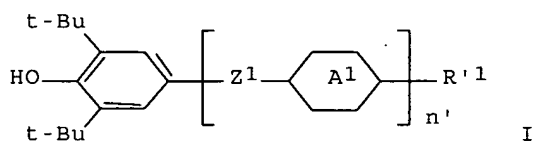
AB The title chiral dopant is represented by a general formula I (Q\* = structure with asym. C atom; R = H, C1-12-alkyl, alkenyl, F, Cl; A = single bond, 1,4-



phenylene, 1,4-cyclohexylene, 1,4-bicyclo(2.2.2)octanyl; Z = single bond, -CH<sub>2</sub>CH<sub>2</sub>-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-, -CF<sub>2</sub>O-, -OCF<sub>2</sub>-, -CF<sub>2</sub>CF<sub>2</sub>-, -C≡C-, -C≡C-; V, W, X, Y = Cl-12-alkyl, alkoxy, H, F, Cl; n = 1-3). The chiral dopants were synthesized and the liquid crystal mixture containing the chiral dopant was prepared

L8 ANSWER 7 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 7  
 AN 2004:307331 HCAPLUS Full-text  
 DN 140:347642  
 TI *Chiral phenol derivative, liquid crystal medium*  
 containing the same, preparation of the liquid crystal medium and  
 electrooptical liquid crystal display  
 IN *Reiffenrath, Volker; Heckmeier, Michael*  
 PA Merck Patent GmbH, Germany  
 SO Ger. Offen., 42 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10246657	A1	20040415	DE 2002-10246657	20021007
	WO 2004033406	A1	20040422	WO 2003-EP10398	20030918
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,				
	GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,				
	LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM,				
	PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,				
	TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,				
	KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,				
	FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,				
	BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003283251	A1	20040504	AU 2003-283251	20030918
	EP 1549599	A1	20050706	EP 2003-775161	20030918
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,				
	IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2006502205	T	20060119	JP 2004-542358	20030918
	US 2006011888	A1	20060119	US 2005-530572	20050407
PRAI	DE 2002-10246657	A	20021007		
	WO 2003-EP10398	W	20030918		
OS	MARPAT 140:347642				
GI					

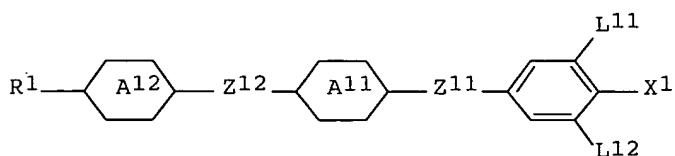


AB The invention relates to a *chiral phenol* derivative represented by I ( $R^*1$  = *chiral* group;  $Z1$  = -CH<sub>2</sub>CH<sub>2</sub>-, -CH=CH-, etc.;  $A1$  = trans-1,4-cyclohexylene, 1,4-cyclohexenylene, etc.;  $n1$  = 1-3) and a nematic liquid crystal mixture containing the *chiral phenol* derivative as a cholesteric phase inducing *chiral*

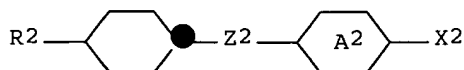
dopant and/or stabilizer. The ~~chiral~~ phenol derivative was synthesized and the nematic liquid crystal mixture was prepared

L8 ANSWER 8 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 8  
 AN 2003:633845 HCAPLUS Full-text  
 DN 139:188401  
 TI Twisted nematic liquid crystalline medium and liquid crystal display  
 IN Heckmeier, Michael; Schoen, Sabine; Kirsch, Peer; Bremer, Matthias; Reiffenrath, Volker  
 PA Merck Patent Gmbh, Germany  
 SO PCT Int. Appl., 81 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003066774	A1	20030814	WO 2003-EP43	20030107
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	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003244469	A1	20030902	AU 2003-244469	20030107
	EP 1472325	A1	20041103	EP 2003-737253	20030107
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	US 2005092966	A1	20050505	US 2003-503476	20030107
	JP 2005517079	T	20050609	JP 2003-566129	20030107
	US 7153550	B2	20061226	US 2004-503476	20040804
PRAI	EP 2002-2653	A	20020205		
	EP 2002-8162	A	20020415		
	WO 2003-EP43	W	20030107		
OS	MARPAT 139:188401				
GI					



I



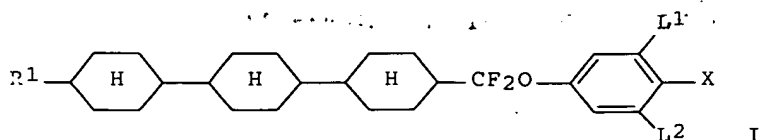
II

AB The instant invention relates to liquid crystalline media comprising a dielec. pos. component, component A, consisting of dielec. pos. compds., comprising one or more compds. of formula I (R1 = alkyl, alkoxy, alkenyl, etc.; X1 = F, Cl, fluorinated alkyl, etc.; A11-12 = 1,4-phenylene, 3-fluoro-1,4-phenylene, 2,6-difluoro-1,4-phenylene, etc.; Z11-12 = -CH2-CH2-, -CF2-CF2-, -CF2-O-, etc.; L11-12 = H, F) and one or more compds. of formula II (R2 = alkyl, alkoxy, alkenyl, etc.; A2 = 1,4-cyclohexylene, 1,4-phenylene, 2-fluoro-1,4-phenylene, etc.; Z2 = -CH2-CH2-, -CF2-CF2-, -CF2-o-, etc.; X2 = F, Cl, fluorinated alkyl, etc.) and to liquid crystal displays comprising these media, especially to active matrix displays. The medium provides a display of significantly reduced response time.

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 9 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 9  
AN 2003:929400 HCAPLUS Full-text  
DN 139:401626  
TI Liquid crystal mixture for TFT active matrix liquid crystal display  
IN Heckmeier, Michael; Schuler, Brigitte; Saito, Izumi;  
Reiffenrath, Volker; Luessem, Georg; Hock, Christian  
PA Merck Patent G.m.b.H., Germany  
SO Eur. Pat. Appl., 49 pp.  
CODEN: EPXXDW  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1365001	A1	20031126	EP 2003-9677	20030430
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	DE 10223061	A1	20031211	DE 2002-10223061	20020524
	EP 1700897	A2	20060913	EP 2006-13446	20030430
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	EP 1717293	A2	20061102	EP 2006-13447	20030430
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	JP 2004067996	A	20040304	JP 2003-146504	20030523
	US 2004016905	A1	20040129	US 2003-445032	20030527
	US 6827990	B2	20041207		
	US 2004245502	A1	20041209	US 2004-885729	20040708
	US 6962733	B2	20051108		
	US 2004256600	A1	20041223	US 2004-885730	20040708
	US 6890607	B2	20050510		
	US 2004256604	A1	20041223	US 2004-885731	20040708
	US 2004262572	A1	20041230	US 2004-885672	20040708
	US 6964794	B2	20051115		
PRAI	DE 2002-10223061	A	20020524		
	EP 2003-9677	A3	20030430		
	US 2003-445032	A3	20030527		
OS	MARPAT 139:401626				
GI					



AB The invention relates to a nematic liquid crystal mixture showing improved phys. properties suitable for a TFT active matrix liquid crystal display, wherein the mixture is based on polar compds. having pos. dielec. anisotropy and the mixture contains a compound(s) represented by a general formula I (R1 = C1-15-alkyl, alkoxy; X = F, Cl, CN, halogenated alkenyl, halogenated alkoxy, halogenated alkenyloxy with C1-6; L1, L2 = H, F).

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 10 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 10

AN 2003:609536 HCAPLUS Full-text

DN 139:171340

TI Liquid crystalline medium with higher birefringence and improved UV stability

IN Heckmeier, Michael; Reiffenrath, Volker

PA Merck Patent GmbH, Germany

SO Eur. Pat. Appl., 21 pp.

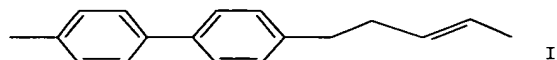
CODEN: EPXXDW

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1333082	A1	20030806	EP 2003-2196	20030204
	EP 1333082	B1	20051109		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	DE 10204607	A1	20030807	DE 2002-10204607	20020205
	AT 309313	T	20051115	AT 2003-2196	20030204
	JP 2003261873	A	20030919	JP 2003-28084	20030205
	US 2003228426	A1	20031211	US 2003-358400	20030205
	US 6808764	B2	20041026		
PRAI	DE 2002-10204607	A	20020205		
OS	MARPAT 139:171340				
GI					

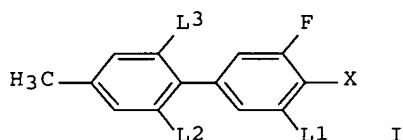


AB The title liquid crystalline medium, suitable for liquid crystal displays, comprises 1-30 % of I and other specified compds. (Markush structures are given).

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 11 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 11  
 AN 2003:373828 HCAPLUS Full-text  
 DN 138:376531  
 TI Fluorinated biphenyl compounds and their use in liquid crystal  
 compositions for liquid crystal displays  
 IN *Reiffenrath, Volker; Heckmeier, Michael; Engel,*  
 Martin; Schuler, Brigitte  
 PA Merck Patent G.m.b.H., Germany  
 SO Eur. Pat. Appl., 84 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1310474	A1	20030514	EP 2002-24495	20021030
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	DE 10250844	A1	20030522	DE 2002-10250844	20021031
	US 2003186002	A1	20031002	US 2002-290292	20021108
	US 7033652	B2	20060425		
	JP 2003201477	A	20030718	JP 2002-326451	20021111
PRAI	DE 2001-10155079	A	20011109		
OS	MARPAT 138:376531				
GI					



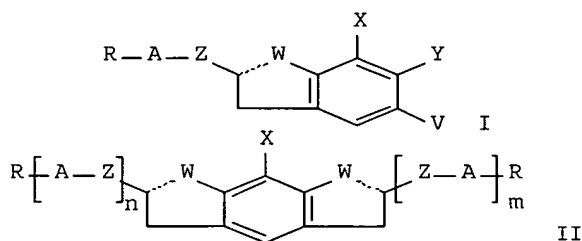
AB The invention relates to a liquid crystal medium based on a pos. or neg. dielec. anisotropic polar compound mixture, wherein the liquid crystal medium includes one or more of compds. represented by I (X = F, Cl, CN, SF5, NCS, halogenated C1-8-alkyl; L1-3 = H, F). The above compds. were synthesized and the liquid crystal mixts. were prepared

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 12 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 12  
 AN 2003:74059 HCAPLUS Full-text  
 DN 138:145162  
 TI Indane compound with negative dielectric anisotropy for VA (vertical align) type liquid crystal display  
 IN *Bremer, Matthias; Heckmeier, Michael; Reiffenrath,*  
*Volker*  
 PA Merck Patent GmbH, Germany  
 SO Ger. Offen., 20 pp.  
 CODEN: GWXXBX  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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 PI DE 1013499 A1 20030130 DE 2001-10135499 20010720  
 TW 243810 B 20051121 TW 2002-91116042 20020718  
 WO 2003010120 A1 20030206 WO 2002-EP8085 20020719  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,  
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,  
 PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,  
 UA, UG, US, UZ, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG,  
 CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,  
 PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,  
 NE, SN, TD, TG  
 EP 1409441 A1 20040421 EP 2002-767236 20020719  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK  
 CN 1507427 A 20040623 CN 2002-809390 20020719  
 JP 2004536140 T 20041202 JP 2003-515482 20020719  
 US 2004171866 A1 20040902 US 2004-484193 20040120  
 US 7122228 B2 20061017  
 PRAI DE 2001-10135499 A 20010720  
 WO 2002-EP8085 W 20020719  
 OS MARPAT 138:145162  
 GI



AB The invention relates to an indane compound with neg.  $\Delta\epsilon$  represented by the formula I or II (R = C1-12-alkyl, alkoxy, C2-12-oxaalkyl, alkenyl, alkenyloxy, C3-12-oxaalkenyl; A = cis-1,4-cyclohexylene, trans-1,4-cyclohexylene, 1,4-phenylene, 1,4-cyclohexyl-3-enylene; Z = single bond, -CH<sub>2</sub>CH<sub>2</sub>-, -CH:CH-, -C.tplbond.C-, -OCH<sub>2</sub>-, -CH<sub>2</sub>O-; X = F, Cl, CN, NCS, CF<sub>3</sub>, OCF<sub>3</sub>, OCHF<sub>2</sub>; n, m = 0-4). The compound is particularly suitable for the production of VA TFT displays.

L8 ANSWER 13 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 13

AN 2002:272781 HCAPLUS Full-text

DN 136:316990

TI Mesogenic liquid crystal compound, nematic liquid crystal mixture showing negative dielectric anisotropy, and plasma addressed liquid crystal display

IN Reuter, Marcus; Heckmeier, Michael; Reiffenrath, Volker

PA Merck Patent G.m.b.H., Germany

form SO Ger. Offen., 50 pp.

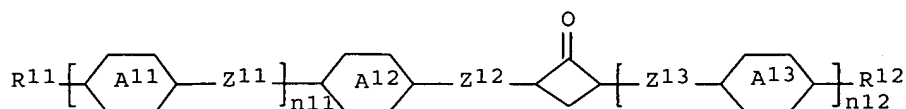
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10141565	A1	20020411	DE 2001-10141565	20010824
	US 2003006399	A1	20030109	US 2001-960723	20010924
	US 6641871	B2	20031104		
PRAI	DE 2000-10047059	IA	20000922		
OS	MARPAT 136:316990				
GI					



I

AB The title new liquid crystal compound is represented by I (R11, R12 = H, C1-15-alkyl; Z11, Z12, Z13 = -CH<sub>2</sub>CH<sub>2</sub>-, -CH=CH-, -C.tplbond.C-, -COO-, -OCO-, -CH<sub>2</sub>O-, -CH<sub>2</sub>-, -CF<sub>2</sub>O-, -OCF<sub>2</sub>-, -(CH<sub>2</sub>)<sub>4</sub>-, -CF=CF-, -CH=CF-, -CF=CH-, single bond; A11, A12, A13 = trans-1,4-cyclohexyl, 1,4-cyclohexenyl, 1,4-Ph, 1,4-bicyclo-(2,2,2)-otylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl, 1,2,3,4-tetrahydronaphthalene-2,6-diyl; n11, n12 = 0, 1, 2). The nematic liquid crystal mixture containing the above liquid crystal shows improved phys. properties suitable for the plasma addressed liquid crystal display.

L8 ANSWER 14 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 14

AN 2001:903386 HCAPLUS Full-text

DN 136:45782

TI Nematic liquid crystal medium for electrooptical liquid crystal display with reorientation layer

IN Heckmeier, Michael; Reuter, Marcus; Reiffenrath, Volker

PA Merck Patent G.m.b.H., Germany

SO Ger. Offen., 26 pp.

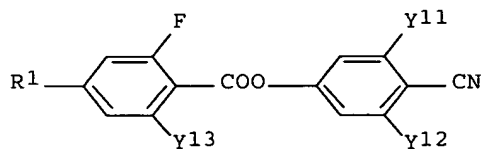
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10112954	A1	20011213	DE 2001-10112954	20010317
	JP 2001354962	A	20011225	JP 2001-119760	20010418
	US 2003224125	A1	20031204	US 2001-836860	20010418
	US 6761938	B2	20040713		
PRAI	DE 2000-10019061	A1	20000418		
OS	MARPAT 136:45782				
GI					



I

AB The invention relates to an IPS (in-plane switching) electrooptical liquid crystal display which contains one or more mesogen compds. represented by I (R1 = H, C1-7-alkyl, alkoxy, C2-7-alkenyl, alkenyloxy, alkoxyalkyl; Y11, Y12, Y13 = H, F) in a liquid crystal medium showing pos. dielec. anisotropy. The IPS liquid crystal display shows excellent contrast.

L8 ANSWER 15 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 15

AN 2000:383663 HCAPLUS Full-text

DN 133:30533

TI Cross-bridged cyclohexane derivatives and liquid crystal medium

IN *Reiffenrath, Volker; Heckmeier, Michael*; Bremer, Matthias

PA Merck Patent G.m.b.H., Germany

SO Eur. Pat. Appl., 103 pp.

CODEN: EPXXDW

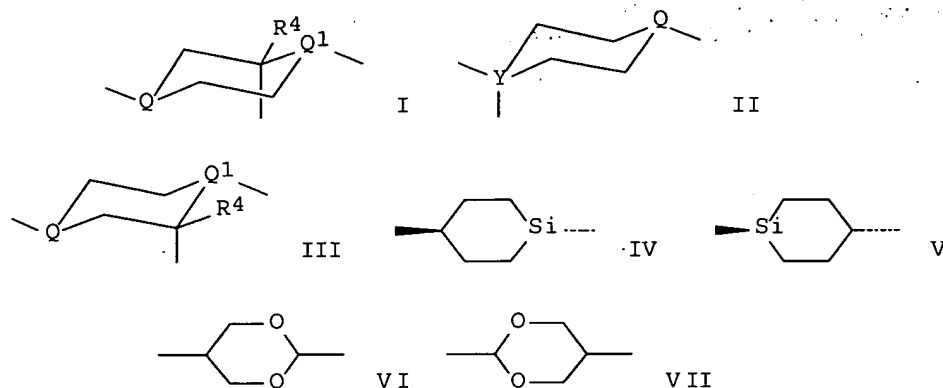
DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1006098	A2	20000607	EP 1999-123223	19991125
	EP 1006098	A3	20001122		
	EP 1006098	B1	20040407		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 19855757	A1	20000621	DE 1998-19855757	19981203
	JP 2000169403	A	20000620	JP 1999-344606	19991203
	US 6203724	B1	20010320	US 1999-453538	19991203
PRAI	DE 1998-19855757	A	19981203		
OS	MARPAT 133:30533				
GI					





AB Cyclohexane derivs. are claimed which are described by the general formula (R-(A-Z)<sub>m</sub>)(R1-(A1-Z1)<sub>n</sub>)B-Xp-B1((Z2-A2)<sub>r</sub>-R2)((Z3-A3)<sub>s</sub>-R3) (B, B1 = independently selected from I, II, or III in which 1 or 2 nonadjacent CH<sub>2</sub> groups may be replaced by O, the rings being bound to the Xp groups via an axial bond; Y = C or Si; Q, Q1 = independently selected Ch or SiH; X = independently selected for each repetition -C.tplbond.C-, -CH:CH-, -CF:CF-, -CF:CH-, -CH<sub>2</sub>, -COO-, or 1,4-phenylene in which ≥1 CH group may be replaced by N or CF; p = 1-4; R, R1-4 = independently selected H and C1-12 alkyl groups which may have a single halogen substituent and in which ≥1 CH group may be replaced by -O-, -S-, -CO-, 1,3-cyclobutyl, -CO-O-, -O-CO-, -O-CO-O-, or -CH:CH- so arranged that they are not directly bound to a heteroatom, CN, F, -CF<sub>3</sub>, -OCF<sub>3</sub>, -OCF<sub>2</sub>, -OCHF<sub>2</sub>, -OCH<sub>2</sub>CF<sub>3</sub>, -OCF<sub>2</sub>CF<sub>3</sub>, or -OCH:CF<sub>2</sub>; A, A1-3 = optionally substituted 1,4-cyclohexyl, IV, V, VI, VII, or 1,4-phenylene in which 1 or 2 CH groups may be replaced by N; Z, Z1-3 = independently selected single bonds, -CO-O-, -O-CO-, -CH<sub>2</sub>O-, -OCH<sub>2</sub>, -CH:CH-, -O-, C2-4 alkyl, -OCF<sub>2</sub>, or -CF<sub>2</sub>CF<sub>2</sub>-; and n, m, r, s = 0-2). Use of the derivs. as components of liquid crystal mixts. is described, as is their use as precursors for liquid crystal polymers. Liquid crystal media, liquid crystal displays, optical switches, and optical filters employing the materials are also described.

L8 ANSWER 16 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 16

AN 2000:396635 HCAPLUS Full-text

DN 133:51347

TI Liquid crystalline medium

IN *Heckmeier, Michael; Schuler, Brigitte; Reiffenrath, Volker*

PA Merck Patent G.m.b.H., Germany

SO Ger. Offen., 24 pp.

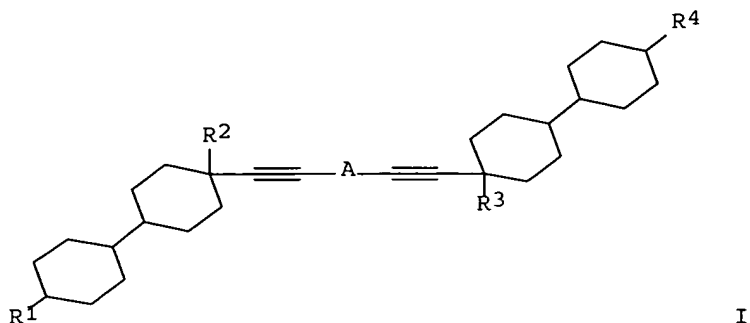
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19959723	A1	20000615	DE 1999-19959723	19991210
	US 6171665	B1	20010109	US 1999-459875	19991214
PRAI	DE 1998-19857504	A1	19981214		
OS	MARPAT 133:51347				
GI					



AB Liquid crystal media based on mixts. of polar compds. having pos. dielec. anisotropies are described which contain  $\geq 1$  of the compds. described by the general formula I ( $R_1-4$  = independently selected unsubstituted, singly substituted with a CN or or  $CF_3$  group, or substituted with  $\geq 1$  halogen C1-12 alkyl or Alkenyl group in which  $\geq 1$   $CH_2$  groups may be independently replaced by -O-, -S-, 1,3-cyclobutyl, -CO-, -CO-O-, -O-CO-, or -O-CO-O-, with the restriction that O atoms may not be directly bound to each other; and A = 1,4-phenylene in which 1 or 2 nonadjacent CH groups may be relaced by N, 2,3-difluoro-1,4-phenylene, 2-fluoro-1,4-phenylene, 3-fluoro-1,4-phenylene, or a single bond). Use of the media for electrooptical applications, especially reflective matrix liquid crystal displays, and electrooptical liquid crystal displays employing the media are also described.

L8 ANSWER 17 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN DUPLICATE 17

AN 2000:366136 HCAPLUS Full-text

DN 133:24765

TI Cyclobutane derivative and liquid crystal material containing the same for liquid crystal display

IN *Reiffenrath, Volker; Heckmeier, Michael*

PA Merck Patent G.m.b.H., Germany

SO Ger. Offen., 46 pp.

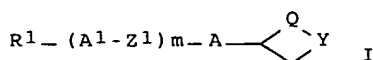
CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19955932	A1	20000531	DE 1999-19955932	19991120
PRAI	DE 1998-19854710	A1	19981126		
OS	MARPAT 133:24765				
GI					



AB The invention relates to the new cyclobutane derivative represented by general formula I (R1 = H, CN, F, OCHF2, OCF3, OCHF2CF3, OCH2CF3, OCF2CF3, C1-12-alkyl; Q = C:O, CCl2, CF2, C:CX1X2; X1, X2 = H, Cl, F; Y = CHR2, CCl2, CF2, C:CHR2; R2 = H, C1-12-alkyl; A, A1 = trans-1,4-cyclohexylene, 1,4-phenylene, 1,4-bicyclo-(2,2,2)-octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl, 1,2,3,4-tetrahydronaphthalene-2,6-diyl; 1,4-cyclohexenylene; Z1 = COO, OCO, CH2O, O, OCH2, CH2CH2, CH:CH, C.tplbond.C, single bond; m = 1-3).

L8 ANSWER 18 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:74172 HCAPLUS Full-text

DN 142:144370

TI Liquid-crystal medium containing monofluoroterphenyl compounds for liquid crystal display

IN Manabe, Atsutaka; Durmaz, Erdal; Poetsch, Eike; *Reiffenrath, Volker; Heckmeier, Michael*

PA Merck Patent G.m.b.H., Germany

SO PCT Int. Appl., 134 pp.

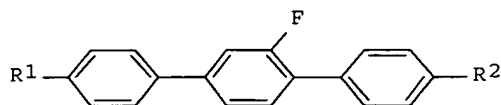
CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005007775	A1	20050127	WO 2004-EP6777	20040623
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 102004030315	A1	20050127	DE 2004-102004030315	20040623
	EP 1646703	A1	20060419	EP 2004-740199	20040623
	R:				
	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
	CN 1823151	A	20060823	CN 2004-80019888	20040623
PRAI	DE 2003-10331490	A	20030711		
	WO 2004-EP6777	W	20040623		
OS	MARPAT 142:144370				
GI					



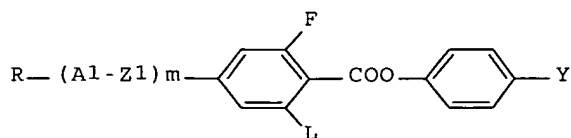
AB The invention relates to a liquid-crystal medium based on a polar compound mixture having a pos. or neg. dielec. anisotropy containing at least one type

of monofluorobiphenyl compound of general formula I (R1, R2 - H, C1-12-alkyl). There are 119 liquid crystal mixture examples. The use of the inventive medium for electro-optical engineering and electro-optical display devices containing said medium are also disclosed.

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 19 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN  
AN 2001:265539 HCAPLUS Full-text  
DN 134:303131  
TI Liquid crystalline phenol esters and liquid crystal mixture suitable for liquid crystal display  
IN *Reiffenrath, Volker; Heckmeier, Michael; Poetsch, Eike; Krause, Joachim; Binder, Werner; Schuler, Brigitte; Goetz, Achim*  
PA Merck Patent G.m.b.H., Germany  
SO PCT Int. Appl., 72 pp.  
CODEN: PIXXD2  
DT Patent  
LA German  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001025370	A1	20010412	WO 2000-EP9133	20000918
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	DE 19947954	A1	20010412	DE 1999-19947954	19991006
	EP 1255799	A1	20021113	EP 2000-967700	20000918
	EP 1255799	B1	20061102		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
	JP 2003511390	T	20030325	JP 2001-528527	20000918
	AT 344310	T	20061115	AT 2000-967700	20000918
	TW 507003	B	20021021	TW 2000-89120480	20001002
	US 2005205843	A1	20050922	US 2005-128314	20050513
	US 2006284139	A1	20061221	US 2006-509018	20060824
PRAI	DE 1999-19947954	A	19991006		
	WO 2000-EP9133	W	20000918		
	US 2002-89975	A3	20020408		
	US 2005-128314	A3	20050513		
OS	MARPAT 134:303131				
GI					



AB The invention relates to liquid crystalline phenol esters of formula I. (R = C<sub>15</sub>-alkyl, alkenyl; A1 = 1,4-cyclohexenylene, 1,4-cyclohexylene, 1,4-phenylene, piperidine-1,4-diyl, etc.; Z1 = CO<sub>2</sub>, OCO, CF<sub>2</sub>O, OCF<sub>2</sub>, CH<sub>2</sub>O, OCH<sub>2</sub>, CH<sub>2</sub>CH<sub>2</sub>, C<sub>2</sub>F<sub>4</sub>, CH=CH, C.tplbond.C, single bond; Y = F, Cl, CN, halogenated-C1-5-alkyl, alkenyl, alkenyloxy, alkoxy; L = H, F; m = 0-3). The invention also relates to liquid crystalline mediums containing at least one phenol ester of formula (I) and to electro-optical displays containing such a liquid crystalline medium.

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 20 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2000:441891 HCAPLUS Full-text

DN 133:81646

TI Liquid crystal medium for liquid crystal display

IN Heckmeier, Michael; Schuler, Brigitte; Tarumi, Kazuaki; Kirsch, Peer; Reiffenrath, Volker

PA Merck Patent G.m.b.H., Germany

SO PCT Int. Appl., 81 pp.

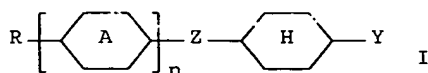
CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000037586	A1	20000629	WO 1999-EP9919	19991214
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	DE 19859421	A1	20000629	DE 1998-19859421	19981222
	EP 1144548	A1	20011017	EP 1999-968797	19991214
	EP 1144548	B1	20040825		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002533526	T	20021008	JP 2000-589645	19991214
	US 6793983	B1	20040921	US 2001-868866	20010621
	US 2004245501	A1	20041209	US 2004-882192	20040702
	US 6951669	B2	20051004		
	US 2004251447	A1	20041216	US 2004-882190	20040702
	US 7026020	B2	20060411		
	US 2005006437	A1	20050113	US 2004-882191	20040702
	US 7081280	B2	20060725		
	US 2005035330	A1	20050217	US 2004-882308	20040702
	US 6953610	B2	20051011		
	US 2005035329	A1	20050217	US 2004-882309	20040702
	US 7033654	B2	20060425		
PRAI	DE 1998-19859421	A	19981222		
	WO 1999-EP9919	W	19991214		
	US 2001-868866	A3	20010621		
OS	MARPAT 133:81646				
GI					

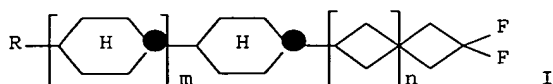


AB The invention relates to a liquid crystal medium based on a mixture of polar compds. having pos. dielec. anisotropy, wherein the medium contains one or more compds. of general formula I (R = H, C1-15-alkyl, alkenyl; A = trans-1,4-cyclohexylene, cyclohexenylene; Y = halogenated C<sub>6</sub>-alkyl, halogenated C<sub>6</sub>-alkenyl, halogenated C<sub>6</sub>-alkoxy, halogenated C<sub>6</sub>-alkenyloxy; Z = -CH<sub>2</sub>O-, -OCH<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>-, -CH:CH-, -CF<sub>2</sub>O-, -OCF<sub>2</sub>-, -C<sub>2</sub>F<sub>4</sub>-, single bond; n = 1, 2).

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 21 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN  
AN 2000:252171 HCAPLUS Full-text  
DN 132:286390  
TI Liquid crystal for reflective liquid crystal display  
IN Poetsch, Eike; Schuler, Brigitte; Heckmeier, Michael;  
Reiffenrath, Volker; Binder, Werner; Krause, Joachim  
PA Merck Patent G.M.B.H., Germany  
SO Jpn. Kokai Tokkyo Koho, 22 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000109840	A	20000418	JP 1999-276095	19990929
	DE 19945889	A1	20000427	DE 1999-19945889	19990924
	US 6146719	A	20001114	US 1999-407940	19990925
PRAI	DE 1998-19844498	A	19980929		
OS	MARPAT 132:286390				
GI					



AB The liquid crystal is made from a mixture of polar compound I (R = C2-15 alkyl, alkenyl; m = 0, 1; m=n = 1, 2, 3) of pos. dielec. anisotropy. The liquid crystal shows the high specific resistance, the low threshold voltage, and the low complex refractive index.

L8 ANSWER 22 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN  
AN 1999:505959 HCAPLUS Full-text  
DN 131:136870  
TI Liquid crystal composition containing substituted phenol and method for adjusting resistance  
IN Darius, Michael; Reiffenrath, Volker; Tarumi, Kazuaki; Rieger,

Bernhard; Heckmeier, Michael; Reuter, Marcus; Kirsch, Peer

PA - Merck Patent G.m.b.H., Germany

SO Ger. Offen., 38 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19903746	A1	19990805	DE 1999-19903746	19990130
	TW 239997	B	20050921	TW 1999-88101509	19990201
	US 6139925	A	20001031	US 1999-243803	19990203
	GB 2334031	A	19990811	GB 1999-2542	19990204
	GB 2334031	B	20030611		
	JP 11302652	A	19991102	JP 1999-27065	19990204
	US 2002084444	A1	20020704	US 2001-907654	20010719
PRAI	DE 1998-19804300	A1	19980204		
	DE 1998-19805912	A1	19980213		
	DE 1998-19851805	A1	19981111		
	DE 1999-19902606	A1	19990123		
	US 2000-658112	A1	20000908		

OS MARPAT 131:136870

AB A liquid crystal mixture with sp. resistance contains 10 ppm to <10% acid compound, especially a phenol. The phenol has specified substitution with cyclic, acidic, and saturated and unsatd. alkyl groups, F and other groups, e.g., 2-cyano-3-fluoro-5-(4-n-propyl-trans-cyclohexyl)phenol. The use of the mixture in liquid crystal displays and the displays are also claimed. The resistance of the mixture is adjusted by addition of the acid compound

L8 ANSWER 23 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2006-671834 [70] WPIX Full-text

CR 2004-216107

DNC C2006-205900 [70]

DNN N2006-535915 [70]

TI Liquid crystal medium, useful for electro-optics, comprises a mixture of cyclohexane compounds with positive dielectric anisotropy and one or more alkyl cyclohexane compounds

DC E19; L03; U11; V07

IN HECKMEIER M; HOCK C; LUESSEM G; REIFFENRATH V; SAITO I; SCHULER B

PA (MERE-C) MERCK PATENT GMBH

CYC 31

PIA EP 1700897 A2 20060913 (200670)\* DE 47[0]

ADT EP 1700897 A2 Div Ex EP 2003-9677 20030430; EP 1700897 A2 EP 2006-13446 20030430

FDT EP 1700897 A2 Div ex EP 1365001 A

PRAI DE 2002-10223061 20020524

AN 2006-671834 [70] WPIX Full-text

CR 2004-216107

AB EP 1700897 A2 UPAB: 20061101

NOVELTY - Liquid crystal medium (A) comprises a mixture of cyclohexane compounds (I) with positive dielectric anisotropy and one or more alkyl cyclohexane compounds (II) and (III).

DETAILED DESCRIPTION - Liquid crystal medium (A) comprising a mixture of cyclohexane compounds of formula (I) with positive dielectric anisotropy and one or more alkyl cyclohexane compounds of formulae (II) and (III).

R1 = halogenated or unsubstituted alkyl or -alkoxy with 1-15C, where one or more CH2-group is substituted by C=C, CH = CH, O, CO-O or O-CO, where O atoms are not directly connected;

X = alkyl, alkenyl, alkoxy or alkenyloxy (all halogenated) with 6C, F, Cl or CN;

L1, L2 = H or F; and

alkyl, alkyl1 = 1-7C alkyl.

An INDEPENDENT CLAIM is included for electro optical liquid crystal comprising (A).

USE - (A) is useful for electro-opticals (claimed).

ADVANTAGE - (A) exhibits favorable electrooptical characteristic and is stable to chemical, heat and light.

L8 ANSWER 24 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2005-566059 [58] WPIX Full-text

DNC C2005-171257 [58]

DNN N2005-464114 [58]

TI New crystalline cholesterol derivatives useful in liquid crystalline medium for liquid-crystal display element e.g. reflective or transfective liquid-crystal display element, and electro-optical display element

DC E15; L03; U11; U14

IN *HECKMEIER M*; KIRSCH P; LUESSEM G; MERGNER T

PA (MERE-C) MERCK PATENT GMBH

CYC 2

PIA GB 2410745 A 20050810 (200558)\* EN 71[0]

DE 102005001420 A1 20050825 (200560) DE

ADT GB 2410745 A GB 2004-28556 20041231; DE 102005001420 A1 DE 2005-102005001420 20050112

PRAI DE 2004-102004005838 20040206

AN 2005-566059 [58] WPIX Full-text

AB GB 2410745 A UPAB: 20051223

NOVELTY - Liquid crystalline cholesterol derivatives are new.

DETAILED DESCRIPTION - Liquid crystalline cholesterol of formula (I) are new.

-MG=-(-A14-Z13-)c-(-A13-Z12-)b-(-A12-Z11-)a-A11-R11;

R11=H, -B(OH)2-, -B(ORx)(ORy), halo, CN, SF5, NCS, or a linear or branched, optionally *chiral* 1-15C alkyl (optionally mono- or poly-substituted by CN, F, Cl, Br and/or I, and optionally having at least one -CH2- replaced by -O-, -S-, -SO2-, -CO-, -CO-O-, -O-CO-, -O-CO-O-, -CH=CH-, -CH=CF-, -CF=CF- or -Ctripple bondC-; such that the heteroatoms are not linked directly to one another);

Rx and Ry=1-8C alkanyl or alkenyl radical;

Rx+Ry=2-8C alkenyl bridge (optionally substituted by at least one 1-4C alkanyl);

A11-A14=1,4-bicyclo(2.2.2)octylene, piperidin-1,4-diyl, naphthylen-2,6-diyl, decahydronaphthalen-2,6-diyl, 1,2,3,4- tetrahydronaphthalen-2,6-diyl (all optionally substituted by F, Cl, CF3, CN, CH3, OCH3, OCHF2 and/or OCF3), trans-1,4-cyclohexylene (having at least one non-adjacent -CH2- group replaced by -O- and/or -S-), or 1,4-phenylene (having one or two CH groups optionally replaced by N; and optionally substituted by F, Cl, CF3, CN, CH3, OCH3, OCHF2 and/or OCF3);

Z11-Z13=-CH2O-, -OCH2-, -CO-O-, -O-CO-, -CF2O-, -OCF2-, -CF2CF2-, -CH2CF2-, -CF2CH2-, -CH2CH2-, -CH=CH-, -CH=CF-, -CF=CH-, -CF=CF-, -CF=CF-COO-, -O-CO-CF=CF-, -Ctripple bondC-, or a single bond;

a-c and n = 0 or 1.

INDEPENDENT CLAIMS are included for the following:

(1) a liquid-crystalline medium containing at least two liquid-crystalline components comprising at least one (I); and

(2) a reflective or transfective liquid-crystal, or electro-optical display element comprising the liquid-crystalline medium.

USE - In a liquid crystalline medium; useful for preparation of a liquid-crystal display elements e.g. reflective liquid-crystal display



element, transflective liquid-crystal display element, and electro-optical display element (claimed) such as TN, STN, IPS and TFT displays.

ADVANTAGE - The compounds have improved stability to light, low-temperature, heat and electric fields, and elastic and/or dielectric properties. The compounds exhibit low birefringence (optical anisotropy) ( $\Delta n$ ), a range of dielectric anisotropy ( $\Delta\epsilon$ ) over negative, neutral, slightly positive and highly positive (preferably strongly positive), high clearing point, good solubility, high curing points, and an ability to form nematic phase with a broad range and not a smectic phase, as compared to the prior art compounds. Thus the compounds broaden the range of liquid-crystalline substances, suitable for formation of a wide range of liquid crystalline devices. In pure state, the compounds are colorless and form liquid-crystalline mesophases in a temperature range that is located for electro-optical use. The compounds further do not have a significant HTP (helical twisting point), in spite of large *chiral* cholesteryl group (having 9 asymmetric centers), both as a pure substance and in the liquid-crystalline mixture, which facilitates their use in mixtures that do not comprise a *chiral* dopant.

L8 ANSWER 25 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 2005-114040 [13] WPIX Full-text  
 DNC C2005-038352 [13]  
 DNN N2005-098341 [13]  
 TI Liquid crystal medium useful for electrooptic purposes, especially displays, comprises 2-fluoro-1,4-diphenylbenzene derivatives  
 DC E14; L03; P81; U11; U14  
 IN DURMAZ E; HECKMEIER M; MANABE A; POETSCH E; REIFFENRATH V  
 PA (MERE-C) MERCK PATENT GMBH  
 CYC 107  
 PIA DE 102004030315 A1 20050127 (200513)\* DE 104[0]  
 WO 2005007775 A1 20050127 (200513) DE  
 EP 1646703 A1 20060419 (200627) DE  
 KR 2006041219 A 20060511 (200672) KO  
 CN 1823151 A 20060823 (200682) ZH  
 ADT DE 102004030315 A1 DE 2004-102004030315 20040623; EP 1646703 A1 EP 2004-740199 20040623; WO 2005007775 A1 WO 2004-EP6777 20040623; EP 1646703 A1 WO 2004-EP6777 20040623; KR 2006041219 A WO 2004-EP6777 20040623; KR 2006041219 A KR 2006-700619 20060110; CN 1823151 A CN 2004-80019888 20040623  
 FDT EP 1646703 A1 Based on WO 2005007775 A; KR 2006041219 A Based on WO 2005007775 A  
 PRAI DE 2003-10331490 20030711  
 AN 2005-114040 [13] WPIX Full-text  
 AB DE 102004030315 A1 UPAB: 20060426

NOVELTY - Liquid crystal medium based on a mixture of polar compounds with positive or negative dielectric anisotropy comprises one or more 2-fluoro-1,4-diphenylbenzene derivatives (I).

DETAILED DESCRIPTION - Liquid crystal medium based on a mixture of polar compounds with positive or negative dielectric anisotropy comprises one or more 2-fluoro-1,4-diphenylbenzene derivatives of formula (I):

R1, R2 = H or 1-12C alkyl, where alkyl is optionally monosubstituted with CN or CF3 or mono- or poly-substituted with halogen and optionally has one or more CH2 groups replaced by O, S, 1,3-cyclobutylene, CH=CH, ethynylene, CO, COO, OCO or OCOO.

An INDEPENDENT CLAIM is also included for electrooptic display devices comprising a liquid crystal medium as above

USE - The liquid crystal medium is useful for electrooptic purposes (claimed), especially in transmissive twisted nematic displays.

ADVANTAGE - (I) have a very low rotational viscosity and a relatively high optical anisotropy.

L8 ANSWER 26 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 2004-582295 [57] WPIX Full-text  
 DNC C2004-212566 [57]  
 DNN N2004-460099 [57]  
 TI New liquid crystal and mesogenic compounds are used in liquid crystal media for use in displays, including reflective, transfective and electrooptical displays  
 DC E19; L03; P81; P85; U11  
 IN **HECKMEIER M**; KIRSCH P; LENGES M  
 PA (MERE-C) MERCK PATENT GMBH  
 CYC 1  
 PIA DE 10357678 A1 20040812 (200457)\* DE 35[0]  
 ADT DE 10357678 A1 DE 2003-10357678 20031210  
 PRAI DE 2003-10303637 20030130  
 AN 2004-582295 [57] WPIX Full-text  
 AB DE 10357678 A1 UPAB: 20050907

NOVELTY - New bridged compounds have 2 or more rings selected from trans-1,4-cyclohexylene, where non-adjacent methylene group(s) may be replaced by oxygen or sulfur, 1,4-(fluoro)phenylene, where 1 or 2 methine groups may be replaced by nitrogen, 1,4-bicyclo(2,2,2)-octylene, piperidin-1,4-diyl, naphth-2,6-diyl, deca- or 1,2,3,4-tetra-hydronaphth- 2,6-diyl or 1,4-cyclohexenylene.

DETAILED DESCRIPTION - Bridged compounds of formula (I) are new:

R1-(A1-Z1)m-(A2-Z2)n-A3-Z3-A4-R2 (I)

R1 = H, halogen or 1-15 C (halo)alkyl, optionally with substituted chain;

R2 = as R1 or -CN, -NCS, -SF5, -CF3, -CF2CF3, -CF2CF2CF3, -OCF3, -OCHF2, -CF2CH2CF3 or -OCH2CF2CHFCF3;

A1, A2, A3, A4 = ring (system);

Z1, Z2, Z3 = -O-, -CH2O-, -OCH2-, -CO-O-, -O-CO-, -CF2O-, -OCF2-, -CF2CF2-, -CH2CF2-, -CF2CH2-, -CH2CF2O-, -OCF2CH2-, -CH2CH2-, -CH=CH-, -CH=CF-, -CF=CH-, -CF=CF-, -CF=CF-COO-, -O-CO-CF=CF-, -CC- or a single bond; and

m, n = 0 or 1.

The full definitions are given in the DEFINITIONS (Full Definitions) Field.

An INDEPENDENT CLAIM is also included for liquid crystal (LC) medium with not less than 2 LC components, which contains at least one compound (I).

USE - Compounds (I) are used as component(s) in liquid crystal (LC) media (claimed). LC media containing not less than 2 LC components, including at least one compound (I), are used in LCDs and as dielectric in reflective or transfective LCDs and electrooptical displays, all of which are claimed per se. (I) are especially useful in displays of the twisted cell, guest-host, aligned phase deformation, electrically controlled birefringence, in-plane-switching (IPS) and dynamic scattering type and in media for twisted nematic (TN), IPS and particularly supertwist nematic (STN) and thin film transistor (TFT) displays. They are especially suitable for increasing the low temperature stability of polar LC mixtures, especially if low birefringence is also necessary. Optically active LC compounds (I) with branched R groups are useful as *chiral* dopants; and smectic compounds of this type are useful in ferroelectric materials.

ADVANTAGE - Compounds (I) are stable liquid crystal (LC) or mesogenic compounds with high dielectric anisotropy, a high clearing point and low rotational viscosity. (I) give LC media with a high voltage holding ratio. They have a very wide mesophase range; excellent miscibility with nematic base mixtures, especially at low temperature; a favorable ratio of rotational viscosity to clearing point; and good solubility. Pure (I) are colorless and

form LC mesophases in a favorable temperature range for electrooptical applications. They are stable chemically, thermally and in light.

L8 ANSWER 27 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 2002-280573 [32] WPIX Full-text  
 DNC C2002-082500 [32]  
 DNN N2002-219156 [32]  
 TI New **chiral** compound for e.g. liquid crystal display, adhesive, cosmetic and pharmaceutical compositions, diagnostics, decorative and security applications, and non-linear optics  
 DC E19; L03; P81; U11; U14; V07  
 IN **HECKMEIER M**; KIRSCH P; KRAUSE J; PAULUTH D; TANGERBECK A; TARUMI K; TAUGERBECK A  
 PA (HECK-I) HECKMEIER M; (KIRS-I) KIRSCH P; (KRAU-I) KRAUSE J; (MERE-C) MERCK PATENT GMBH; (PAUL-I) PAULUTH D; (TANG-I) TANGERBECK A; (TARU-I) TARUMI K  
 CYC 96  
 PIA WO 2002006196 A1 20020124 (200232)\* EN 53[0]  
 AU 2001066092 A 20020130 (200236) EN  
 EP 1299334 A1 20030409 (200325) EN  
 KR 2003022269 A 20030315 (200350) KO  
 US 20030175445 A1 20030918 (200362) EN  
 TW 538118 A 20030621 (200377) ZH  
 JP 2004504286 W 20040212 (200413) JA 93  
 US 7060331 B2 20060613 (200639) EN  
 ADT WO 2002006196 A1 WO 2001-EP7217 20010625; AU 2001066092 A AU 2001-66092 20010625; EP 1299334 A1 EP 2001-943543 20010625; EP 1299334 A1 WO 2001-EP7217 20010625; US 20030175445 A1 WO 2001-EP7217 20010625; JP 2004504286 W WO 2001-EP7217 20010625; TW 538118 A TW 2001-115635 20010627; JP 2004504286 W JP 2002-512103 20010625; US 20030175445 A1 US 2003-332470 20030109; KR 2003022269 A KR 2003-700358 20030110; US 7060331 B2 WO 2001-EP7217 20010625; US 7060331 B2 US 2003-332470 20030109  
 FDT AU 2001066092 A Based on WO 2002006196 A; EP 1299334 A1 Based on WO 2002006196 A; JP 2004504286 W Based on WO 2002006196 A; US 7060331 B2 Based on WO 2002006196 A  
 PRAI EP 2000-115250 20000713  
 AN 2002-280573 [32] WPIX Full-text  
 AB WO 2002006196 A1 UPAB: 20050525

NOVELTY - A **chiral** compound for e.g. liquid crystal display, is new.

DETAILED DESCRIPTION - A **chiral** compound of formula R1-X1-A1-(Z-A2)m-X2-R2 is new.

R1, R2 = F, Cl, Br, CN, SCN, SF5, 2-30C alkyl optionally mono- or poly-substituted by F, Cl, Br, or CN, **chiral** group comprising aromatic or aliphatic ring(s) that may include fused or spirocyclic systems, and may contain heteroatoms, or a polymerizable group;

X1, X2 = -CF2O-, -OCF2-, -CF2S-, -SCF2-, -CF2CH2-, -CH2CF2-, -CF2CF2-, -CF=CH-, -CH=CF-, -CF=CF-, or single bond;

Z = -O-, -S-, -CO-, -COO-, -OCO-, -OCOO-, -CO-N(R3)-, -N(R3)-CO-, -OCH2-, -CH2O-, SCH2, CH2S-, -CF2O-, -OCF2-, -CF2S-, -SCF2-, -CH2CH2-, -CF2CH2-, -CF2CF2-, -CH=CH-, -CF=CH-, -CH=CF-, -CF=CF-, -C triple bond C-, -CH=CH-COO-, -OCO-CH=CH-, or single bond;

R3 = H or 1-4C alkyl;

A1, A2 = 1,4-phenylene having CH group(s) that can be replaced by N, 1,4-cyclohexylene, and having 1 or 2 non-adjacent CH2 groups that can be replaced by O and S, 1,3-dioxolane-4,5-diyl, 1,4-cyclohexenylene, 1,4-bicyclo-(2,2,2)-octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl, 1,2,3,4-tetrahydronaphthalene-2,6-diyl, or indane-2,5-diyl; where all groups are optionally mono- or poly-substituted with halo, CN, NO2, or alkyl, alkoxy, alkylcarbonyl, or alkoxycarbonyl groups having 1-7 carbons, and where H atom(s) may be substituted by F or Cl; and

m = 1-5.

Non-adjacent CH<sub>2</sub> groups in R<sub>1</sub> and R<sub>2</sub> may be replaced by -O-, -S-, -NH-, -N(CH<sub>3</sub>)-, -CO-, -COO-, -OCO-, -OCO-O-, -S-CO-, -CO-S-, -CH=CH-, or -C≡C- such that oxygen atoms are not directly linked. At least one of X<sub>1</sub>, X<sub>2</sub>, and Z is -CF<sub>2</sub>O-, -OCF<sub>2</sub>-, -CF<sub>2</sub>S-, -SCF<sub>2</sub>-, -CF<sub>2</sub>CH<sub>2</sub>-, -CH<sub>2</sub>CF<sub>2</sub>-, -CF<sub>2</sub>CF<sub>2</sub>-, -CF=CH-, -CH=CF-, or -CF=CF-. At least one of R<sub>1</sub> and R<sub>2</sub> is a *chiral* group. INDEPENDENT CLAIMS are also included for:

- (a) a liquid crystalline mixture comprising a *chiral* compound;
- (b) *chiral* linear or crosslinked liquid crystalline polymer obtained by polymerizing a mixture containing the *chiral* compound;
- (c) liquid crystal display comprising the liquid crystalline mixture;
- (d) cholesteric liquid crystalline medium comprising a *chiral* component containing the *chiral* compound, and a nematic component containing nematic or nematogenic compound(s); and
- (e) a surface stabilized cholesteric texture (SSCT) display comprising the cholesteric liquid crystalline medium.

USE - For liquid crystal display e.g. supertwisted nematic, twisted nematic, active matrix-twisted nematic, temperature compensation, ferroelectric, guest-host, phase change, SSCT, or polymer stabilized cholesteric texture displays; in active and passive optical elements e.g. polarizers, compensators, alignment layers, color filters, and holographic elements; in adhesive; synthetic resin with anisotropic mechanical properties; cosmetic and pharmaceutical compositions e.g. as ultraviolet filter; diagnostics; liquid crystal pigments; decorative and security applications; non-linear optics; optical information storage; or as *chiral* dopant (all claimed).

ADVANTAGE - The *chiral* compound exhibits good solubility in liquid crystalline mixtures, and is mesogenic or liquid crystalline. High twisting power (HTP) can be obtained by varying the *chiral* groups R<sub>1</sub> and R<sub>2</sub>. When used as dopant, high amounts can be used to produce a high twist. The liquid crystal phase of the host mixture is less negatively influenced. Enantiomerically pure *chiral* compounds can be prepared from cheap, readily available starting materials. R and S enantiomers can be prepared, which allows the formation of a cholesteric phase with either a right or left-handed cholesteric helix. The availability of both helices enables the production of *chiral* films or coatings reflecting circularly polarized light of a single handedness.

L8 ANSWER 28 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 2003-023970 [02] WPIX Full-text  
 DNC C2003-005880 [02]  
 DNN N2003-019031 [02]  
 TI Liquid crystal medium with improved property adaptable to practical use  
 and liquid crystal display containing the medium  
 DC E19; L03; P81; U11; U14  
 IN BREMER M; HECKMEIER M; ICHINOSE H; KIRSCH P; NAKAJIMA S;  
 REIFFENRATH V; SUGIYAMA Y; TANAKA Y  
 PA (MERE-C) MERCK PATENT GMBH  
 CYC 1  
 PIA JP 2002302673 A 20021018 (200302)\* JA 21[0]  
 ADT JP 2002302673 A JP 2002-16527 20020125  
 PRAI EP 2001-101867 20010126  
 AN 2003-023970 [02] WPIX Full-text  
 AB JP 2002302673 A UPAB: 20050527

NOVELTY - Liquid crystal medium containing dielectrically positive component (II) and dielectrically negative component (I) has improved properties, including wide nematic phase range, low viscosity and proper optical anisotropy.

DETAILED DESCRIPTION - Liquid crystal medium containing dielectrically positive component of formula (II) and dielectrically negative component of formula (I) has improved properties, including wide nematic phase range, low viscosity and proper optical anisotropy.

R1, R21, R22 = 1- 7 C alkyl, alkoxy, fluorinated alkyl, fluorinated alkoxy, 2-7C alkenyl, alkenyloxy, alkoxyalkyl or fluorinated alkenyl;

X1 = 1-4 C fluorinated alkyl or alkoxy;

A1, A21 = cyclohexylene or cyclohexenylene;

A22 = cyclohexylene, phenylene or 2,3-difluorophenylene;

Z21, Z22 = -CH<sub>2</sub>CH<sub>2</sub>-, -COO-, trans-CH=CH-, trans-CF=CF-, -CH<sub>2</sub>O-, -CF<sub>2</sub>- or single bond;

L21, L22 = C-F or N; and

m = 0 or 1.

An INDEPENDENT CLAIM is included for a liquid crystal display, especially active matrix display containing the claimed medium.

USE - The liquid crystal medium is useful for liquid crystal display, preferably addressed by active matrix, more preferably thin film transistor matrix or plasma addressed liquid crystal display.

ADVANTAGE - The liquid crystal medium exhibits proper ratio of dielectric constant;  $\epsilon_{\parallel}/\epsilon_{\perp}$  of at least 1.80, proper phase range or proper optical anisotropy  $\Delta n$  of at least 0.09.

L8 ANSWER 29 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 2001-329885 [35] WPIX Full-text  
 DNC C2001-101424 [35]  
 DNN N2001-237432 [35]  
 TI New liquid crystalline fluoro-, chloro-, cyano-, halo-alk(en)yl- and haloalkoxy-phenyl (hetero) alk(en)yl- and (hetero)alk(en)yl-(hetero)cyclyl-(di)fluorobenzoates are useful in medium for electrooptical purposes  
 DC E19; L03; P81; P85; U11; U14; W05  
 IN BINDER W; GOETZ A; GOTZ A; HECKMEIER M; KRAUSE J; POETSCH E; REIFFENRATH V; SCHULER B  
 PA (BIND-I) BINDER W; (GOTZ-I) GOTZ A; (HECK-I) HECKMEIER M; (KRAU-I) KRAUSE J; (MERE-C) MERCK PATENT GMBH; (POET-I) POETSCH E; (REIF-I) REIFFENRATH V; (SCHU-I) SCHULER B  
 CYC 91  
 PIA DE 19947954 A1 20010412 (200135)\* DE 41[0]  
 WO 2001025370 A1 20010412 (200135) DE  
 AU 2000077777 A 20010510 (200143) EN  
 KR 2002042860 A 20020607 (200278) KO  
 EP 1255799 A1 20021113 (200282) DE  
 JP 2003511390 W 20030325 (200330) JA 75  
 TW 507003 A 20021021 (200341) ZH  
 US 20050205843 A1 20050922 (200563) EN  
 EP 1255799 B1 20061102 (200672) DE  
 ADT DE 19947954 A1 DE 1999-19947954 19991006; AU 2000077777 A AU 2000-77777 20000918; EP 1255799 A1 EP 2000-967700 20000918; WO 2001025370 A1 WO 2000-EP9133 20000918; EP 1255799 A1 WO 2000-EP9133 20000918; JP 2003511390 W WO 2000-EP9133 20000918; US 20050205843 A1 Div Ex WO 2000-EP9133 20000918; TW 507003 A TW 2000-120480 20001002; JP 2003511390 W JP 2001-528527 20000918; KR 2002042860 A KR 2002-704466 20020406; US 20050205843 A1 Div Ex US 2002-89975 20020408; US 20050205843 A1 US 2005-128314 20050513; EP 1255799 B1 EP 2000-967700 20000918; EP 1255799 B1 WO 2000-EP9133 20000918  
 FDT AU 2000077777 A Based on WO 2001025370 A; EP 1255799 A1 Based on WO 2001025370 A; JP 2003511390 W Based on WO 2001025370 A; EP 1255799 B1 Based on WO 2001025370 A  
 PRAI DE 1999-19947954 19991006  
 AN 2001-329885 [35] WPIX Full-text

AB DE 19947954 A1 UPAB: 20060117  
 NOVELTY - Liquid crystalline 4-fluoro-, 4-chloro-, 4-cyano- and 4-(poly)halo-alk(en)yl- and -alkoxy-phenyl 4-(hetero)alk(en)yl- and 4-(4-(hetero)alk(en)yl-mono- and -di-(hetero)cyclyl)-2-fluoro- and -2,6-difluorobenzoates (I) are new.

DETAILED DESCRIPTION - Liquid crystalline 4-fluoro-, 4-chloro-, 4-cyano- and 4-(poly)halo-alk(en)yl- and -alkoxy-phenyl 4-(hetero)alk(en)yl- and 4-(4-(hetero)alk(en)yl-mono- and -di-(hetero)cyclyl)-2-fluoro- and -2,6-difluorobenzoates of formula (I) are new;

R = 1-15 carbon (C) alk(en)yl, optionally monosubstituted by cyano (CN) or trifluoromethyl (CF<sub>3</sub>) or at least monosubstituted by halogen, in which 1 or more methylene (CH<sub>2</sub>) groups may be replaced by oxygen (-O-), sulfur (-S-), -CC- or carboxy (-OC-O- or -O-CO-), without adjacent O atoms;

A1 = (a) 1,4-phenylene, in which 1 or 2 CH groups may be replaced by nitrogen (N), (b) 1,4-cyclohex(en)ylene, in which 1 or 2 non-adjacent CH<sub>2</sub> groups may be replaced by -O- or -S-, or (c) a piperidin-1,4-diyl, 1,4-bicyclo(2,2,2)octylene or naphthalen-2,6-diyl groups and groups (a) and (b) may have halogen substituent(s);

Z1 = -CO-O-, -O-CO-, -CF<sub>2</sub>O-, -OCF<sub>2</sub>-, -CH<sub>2</sub>O-, -OCH<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>-, -C<sub>2</sub>F<sub>4</sub>-, -CH=CH-, -CC- or a single bond;

Y = fluorine (F), chlorine (Cl), CN or a mono- or polyhalogenated 1-15 C alk(en)yl or alkoxy group;

L = hydrogen (H) or F;

m = 0, 1 or 2

INDEPENDENT CLAIMS are also included for (a) a liquid crystalline medium containing not less than 2 mesogenic compounds, which contain phenol ester(s) (I); (b) electrooptical liquid crystal displays containing the medium.

USE - The medium is used for electrooptical purposes (claimed), especially in matrix liquid crystal, twisted nematic and supertwisted nematic displays.

ADVANTAGE - The medium combines very high specific resistance and low threshold voltage and avoid drawbacks of existing media. (I) have a wide range of application. Depending on their substituents, they can be used as the basis for liquid crystal media or as additives to other media to modify the dielectric anisotropy and/or birefringence and/or to optimize the threshold voltage and/or viscosity. Pure (I) are colorless, form liquid crystalline mesophases in a temperature range suitable for electrooptical purposes, have a high clearing point and are stable chemically, thermally and towards light.

L8 ANSWER 30 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 2000-424563 [37] WPIX Full-text  
 DNC C2000-128798 [37]  
 DNN N2000-316573 [37]  
 TI New partly fluorinated 4-(cyanotetrafluorosulfanyl)-phenyl or benzoate derivatives of (hetero)cyclic compounds useful in liquid media for displays and new 4-(cyanotetrafluorosulfanyl)-benzene derivatives  
 DC E13; E14; L03; P81; P85; U11; V07  
 IN **HECKMEIER M**; KIRSCH P; KRAUSE J  
 PA (MERE-C) MERCK PATENT GMBH  
 CYC 1  
 PIA DE 19958154 A1 20000615 (200037)\* DE 33[0]  
 ADT DE 19958154 A1 DE 1999-19958154 19991203  
 PRAI DE 1998-19857197 19981211  
 AN 2000-424563 [37] WPIX Full-text  
 AB DE 19958154 A1 UPAB: 20050411

NOVELTY - Partly fluorinated 4-(cyanotetrafluorosulfanyl)-phenyl or benzoate derivatives (I) of (hetero)cyclic compounds are new.

DETAILED DESCRIPTION - Partly fluorinated 4-  
(cyanotetrafluorosulfanyl)-phenyl or -benzoate derivatives (I) of  
(hetero)cyclic compounds of formula (A; X = R1-(A1-Z1)m-A2-Z2-) are new.

R1 = hydrogen (H) or optionally substituted and/or modified 1-15 carbon  
(C) alk(en)yl;

A1, A2 = optionally substituted cycloaliphatic or (hetero)aromatic  
rings;

Z1, Z2 = a linking group or single bond;

m = 0, 1 or 2;

L1, L2 = H, fluorine (F) or chlorine (Cl).

The full definitions are given in the DEFINITIONS (Full Definitions)

Field.

An INDEPENDENT CLAIM is also included for new 4-  
(cyanotetrafluorosulfanyl)-benzaldehydes, -anilines, -*phenols* and -phenyl  
chlorides, bromides and iodides (II) of formula (A; X = -CHO, -NH2, -OH, -Cl,  
-Br or -I).

USE - Compounds (I) are used as components of liquid crystal (LC)  
media, preferably with not less than 2 LC components; and the LC media are  
used in electro-optical displays, especially as dielectric (all claimed). They  
are useful in LC and electro-optical displays, especially displays of the  
twisted cell, guest-host, aligned phase deformation, or dynamic scattering  
type. (I) with suitable R1 groups are useful for preparing LC polymers or  
polycondensates; optically active (I) with branched R1 groups are useful as  
*chiral* dopants; smectic compounds of this type are useful in ferroelectric  
materials; and (I) with SA phases are useful for thermally addressed displays.  
Compounds (II) are intermediates obtained in the preparation of (I).

ADVANTAGE - (I) are stable LC or mesogenic compounds with relatively  
low viscosity and high dielectric anisotropy. They give stable LC media with a  
wide mesophase range, favorable birefringence and dielectric anisotropy and  
very good low temperature characteristics.

L8 ANSWER 31 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
AN 2000-340877 [30] WPIX Full-text  
DNC C2000-103628 [30]  
DNN N2000-255970 [30]  
TI Liquid crystal medium for electro-optical displays based on polar  
compounds with positive dielectric anisotropy, contains compounds with  
linked cyclohexane rings and a terminal difluoro-cyclobutane group  
DC E19; L03; P81; P85; U11; U14; V07  
IN BINDER W; *HECKMEIER M*; KRAUSE J; POETSCH E; REIFENRATH V;  
*REIFFENRATH V*; SCHULER B; WERNER B  
PA (MERE-C) MERCK PATENT GMBH  
CYC 3  
PIA DE 19945889 A1 20000427 (200030)\* DE 19[0]  
JP 2000109840 A 20000418 (200030) JA 22  
US 6146719 A 20001114 (200060) EN  
ADT DE 19945889 A1 DE 1999-19945889 19990924; US 6146719 A US 1999-407940  
19990925; JP 2000109840 A JP 1999-276095 19990929  
PRAI DE 1998-19844498 19980929  
AN 2000-340877 [30] WPIX Full-text  
AB DE 19945889 A1 UPAB: 20050411

NOVELTY - A liquid crystal medium based on polar compounds with positive  
dielectric anisotropy contains one or more compounds with one or two trans-  
1,4-cyclohexylene group(s) and a terminal 3,3-difluorocyclobut-1-yl group,  
possibly connected by one or two spiro-linked cyclobutane-1,3-diyl groups.

DETAILED DESCRIPTION - A liquid crystal (LC) medium based on a mixture  
of polar compounds with positive dielectric anisotropy contains one or more  
compounds of formula (I).

R = H, 1-15C alkyl or 2-15C alkenyl (optionally substituted with one CN or CF<sub>3</sub> group or at least one halogen atom and optionally with one or more CH<sub>2</sub> groups replaced by -O-, -S-, cyclobutane-1,3-diyl, -CO-, -COO-, -OCO- or -OCOO- with no direct bond between oxygen atoms);

m = 0 or 1;

n = 0, 1 or 2; and

(m+n) = 1, 2 or 3

An INDEPENDENT CLAIM is also included for electro-optical LC displays containing an LC medium as described above.

USE - For electro-optical applications (claimed). Preferred applications are in TN, STN or matrix liquid crystal displays.

ADVANTAGE - Colorless compounds with good chemical, thermal and light stability combined with suitable liquid crystal (LC) properties, which enable the production of LC media with very high specific resistance, low threshold voltage and low optical anisotropy.

Member(0002)

ABEQ JP 2000109840 A UPAB 20050411

NOVELTY - A liquid crystal medium based on polar compounds with positive dielectric anisotropy contains one or more compounds with one or two trans-1,4-cyclohexylene group(s) and a terminal 3,3-difluorocyclobut-1-yl group, possibly connected by one or two spiro-linked cyclobutane-1,3-diyl groups.

DETAILED DESCRIPTION - A liquid crystal (LC) medium based on a mixture of polar compounds with positive dielectric anisotropy contains one or more compounds of formula (I).

R = H, 1-15C alkyl or 2-15C alkenyl (optionally substituted with one CN or CF<sub>3</sub> group or at least one halogen atom and optionally with one or more CH<sub>2</sub> groups replaced by -O-, -S-, cyclobutane-1,3-diyl, -CO-, -COO-, -OCO- or -OCOO- with no direct bond between oxygen atoms);

m = 0 or 1;

n = 0, 1 or 2; and

(m+n) = 1, 2 or 3

An INDEPENDENT CLAIM is also included for electro-optical LC displays containing an LC medium as described above.

USE - For electro-optical applications (claimed). Preferred applications are in TN, STN or matrix liquid crystal displays.

ADVANTAGE - Colorless compounds with good chemical, thermal and light stability combined with suitable liquid crystal (LC) properties, which enable the production of LC media with very high specific resistance, low threshold voltage and low optical anisotropy.

Member(0003)

ABEQ US 6146719 A UPAB 20050411

NOVELTY - A liquid crystal medium based on polar compounds with positive dielectric anisotropy contains one or more compounds with one or two trans-1,4-cyclohexylene group(s) and a terminal 3,3-difluorocyclobut-1-yl group, possibly connected by one or two spiro-linked cyclobutane-1,3-diyl groups.

DETAILED DESCRIPTION - A liquid crystal (LC) medium based on a mixture of polar compounds with positive dielectric anisotropy contains one or more compounds of formula (I).

R = H, 1-15C alkyl or 2-15C alkenyl (optionally substituted with one CN or CF<sub>3</sub> group or at least one halogen atom and optionally with one or more CH<sub>2</sub> groups replaced by -O-, -S-, cyclobutane-1,3-diyl, -CO-, -COO-, -OCO- or -OCOO- with no direct bond between oxygen atoms);

m = 0 or 1;

n = 0, 1 or 2; and

(m+n) = 1, 2 or 3



Abstract: An INDEPENDENT CLAIM is also included for electro-optical LC displays containing an LC medium as described above.

USE - For electro-optical applications (claimed). Preferred applications are in TN, STN or matrix liquid crystal displays.

ADVANTAGE - Colorless compounds with good chemical, thermal and light stability combined with suitable liquid crystal (LC) properties, which enable the production of LC media with very high specific resistance, low threshold voltage and low optical anisotropy.

L8 ANSWER 32 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 2000-483793 [43] WPIX Full-text  
 DNC C2000-145807 [43]  
 DNN N2000-359518 [43]  
 TI Liquid crystal composition, useful in display devices, comprises mixture with positive dielectric anisotropy and contains specific fluorinated cyclohexane derivatives  
 DC A85; E19; L03; P55; P81; P85; U11; U14; V07  
 IN HECKMEIER M; HECKMEIR M; KIRSCH P; KRISCH P; REIFFENRATH V; SCHULER B; TARUMI K  
 PA (HECK-I) HECKMEIER M; (HECK-I) HECKMEIR M; (KIRS-I) KIRSCH P; (MERE-C) MERCK PATENT GMBH; (REIF-I) REIFFENRATH V; (SCHU-I) SCHULER B; (TARU-I) TARUMI K  
 CYC 86  
 PIA DE 19859421 A1 20000629 (200043)\* DE 29[0]  
 WO 2000037586 A1 20000629 (200043) DE  
 AU 2000026608 A 20000712 (200048) EN  
 EP 1144548 A1 20011017 (200169) DE  
 KR 2001099869 A 20011109 (200229) KO  
 JP 2002533526 W 20021008 (200281) JA 84  
 EP 1144548 B1 20040825 (200456) DE  
 US 6793983 B1 20040921 (200462) EN  
 DE 59910363 G 20040930 (200465) DE  
 US 20040245501 A1 20041209 (200481) EN  
 US 20040251447 A1 20041216 (200501) EN  
 US 20050006437 A1 20050113 (200506) EN  
 US 20050035329 A1 20050217 (200514) EN  
 US 20050035330 A1 20050217 (200514) EN  
 US 6951669 B2 20051004 (200565) EN  
 US 6953610 B2 20051011 (200567) EN  
 US 7026020 B2 20060411 (200626) EN  
 US 7033654 B2 20060425 (200628) EN  
 US 7081280 B2 20060725 (200649) EN  
 ADT DE 19859421 A1 DE 1998-19859421 19981222; DE 59910363 G DE 1999-510363 19991214; EP 1144548 A1 EP 1999-968797 19991214; EP 1144548 B1 EP 1999-968797 19991214; DE 59910363 G EP 1999-968797 19991214; US 6951669 B2 Div Ex US 1999-868866 19991214; US 6953610 B2 Div Ex US 1999-868866 19991214; US 7026020 B2 Div Ex US 1999-868866 19991214; US 7033654 B2 Div Ex US 1999-868866 19991214; WO 2000037586 A1 WO 1999-EP9919 19991214; EP 1144548 A1 WO 1999-EP9919 19991214; JP 2002533526 W WO 1999-EP9919 19991214; EP 1144548 B1 WO 1999-EP9919 19991214; US 6793983 B1 WO 1999-EP9919 19991214; DE 59910363 G WO 1999-EP9919 19991214; US 20050035329 A1 Div Ex WO 1999-EP9919 19991214; US 20050035330 A1 Div Ex WO 1999-EP9919 19991214; US 6951669 B2 Div Ex WO 1999-EP9919 19991214; US 6953610 B2 Div Ex WO 1999-EP9919 19991214; US 7026020 B2 Div Ex WO 1999-EP9919 19991214; US 7033654 B2 Div Ex WO 1999-EP9919 19991214; AU 2000026608 A AU 2000-26608 19991214; JP 2002533526 W JP 2000-589645 19991214; KR 2001099869 A KR 2001-707855 20010621; US 6793983 B1 US 2001-868866 20010621; US 20050006437 A1 Cont of US 2001-868866 20010621; US 20050035329 A1 Div Ex US 2001-868866 20010621; US 20050035330 A1 Div Ex US 2001-868866 20010621; US 20040245501 A1 Div Ex US 2004-868866 20040617;

US 20040251447 A1 US 2004-882190 20040702; US 7026020 B2 US 2004-882190 20040702; US 20050006437 A1 US 2004-882191 20040702; US 20040245501 A1 US 2004-882192 20040702; US 6951669 B2 US 2004-882192 20040702; US 20050035330 A1 US 2004-882308 20040702; US 6953610 B2 US 2004-882308 20040702; US 20050035329 A1 US 2004-882309 20040702; US 7033654 B2 US 2004-882309 20040702; US 7081280 B2 Cont of US 1999-868866 19991214; US 7081280 B2 Cont of WO 1999-EP9919 19991214; US 7081280 B2 US 2004-882191 20040702

FDT DE 59910363 G Based on EP 1144548 A; US 20050006437 A1 Cont of US 6793983 B; US 20050035329 A1 Div ex US 6793983 B; US 20050035330 A1 Div ex US 6793983 B; US 6951669 B2 Div ex US 6793983 B; US 6953610 B2 Div ex US 6793983 B; US 7026020 B2 Div ex US 6793983 B; US 7033654 B2 Div ex US 6793983 B; AU 2000026608 A Based on WO 2000037586 A; EP 1144548 A1 Based on WO 2000037586 A; JP 2002533526 W Based on WO 2000037586 A; EP 1144548 B1 Based on WO 2000037586 A; US 6793983 B1 Based on WO 2000037586 A; DE 59910363 G Based on WO 2000037586 A; US 7081280 B2 Cont of US 6793983 B

PRAI DE 1998-19859421 19981222

AN 2000-483793 [43] WPIX Full-text

AB DE 19859421 A1 UPAB: 20060421

NOVELTY - Liquid crystal (LC) medium (A), based on one or more polar compounds with positive dielectric anisotropy, also includes a compound (I) with at least two cyclohexane, or derivative, rings and includes a haloalkyl or haloalkoxy substituent.

DETAILED DESCRIPTION - (I) has the following formula.

R = hydrogen, 1-15C alkyl substituted by one cyano or trifluoromethyl, or by one or more halo, optionally with one or more methylenes replaced by oxygen, sulfur, 1,3-cyclobutylene, CO, COO, OCO or OCOO, provided oxygen atoms are not linked directly to each other;

A = trans-1,4-cyclohexylene (optionally with one or two methylene replaced by oxygen and/or sulfur) or cyclohexylenylene;

Y = 1-6C halogenated alkyl or alkoxy;

Z = CH<sub>2</sub>O, OCH<sub>2</sub>, CH=CH, CF<sub>2</sub>CF<sub>2</sub> or single bond;

n = 1 or 2.

An INDEPENDENT CLAIM is also included for an electro-optical LC devices containing (A).

USE - (A) are used in electro-optical devices (displays), particularly in matrix LC cells (most preferred), or twisted nematic or supertwisted nematic cells. (I) that contain a polymerizable group are also used to make polymeric liquid crystal materials.

ADVANTAGE - (I) has very high specific resistance, low threshold voltage and low double refraction, also a broad nematic range (particularly at low temperature) and good switchability at very low temperatures. (I) have good chemical, thermal and light stability and where they contain a chiral substituent are also suitable as chiral dopants.

Member(0002)

ABEQ WO 2000037586 A1 UPAB 20060421

NOVELTY - Liquid crystal (LC) medium (A), based on one or more polar compounds with positive dielectric anisotropy, also includes a compound (I) with at least two cyclohexane, or derivative, rings and includes a haloalkyl or haloalkoxy substituent.

DETAILED DESCRIPTION - (I) has the following formula.

R = hydrogen, 1-15C alkyl substituted by one cyano or trifluoromethyl, or by one or more halo, optionally with one or more methylenes replaced by oxygen, sulfur, 1,3-cyclobutylene, CO, COO, OCO or OCOO, provided oxygen atoms are not linked directly to each other;

A = trans-1,4-cyclohexylene (optionally with one or two methylene

replaced by oxygen and/or sulfur) or cyclohexylenylene; Y = 1-6C halogenated alkyl or alkoxy; Z = CH<sub>2</sub>O, OCH<sub>2</sub>, CH=CH, CF<sub>2</sub>CF<sub>2</sub> or single bond; n = 1 or 2.

An INDEPENDENT CLAIM is also included for an electro-optical LC devices containing (A).

USE - (A) are used in electro-optical devices (displays), particularly in matrix LC cells (most preferred), or twisted nematic or supertwisted nematic cells. (I) that contain a polymerizable group are also used to make polymeric liquid crystal materials.

ADVANTAGE - (I) has very high specific resistance, low threshold voltage and low double refraction, also a broad nematic range (particularly at low temperature) and good switchability at very low temperatures. (I) have good chemical, thermal and light stability and where they contain a chiral substituent are also suitable as chiral dopants.

L8 ANSWER 33 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 1999-432471 [37] WPIX Full-text  
 DNC C1999-127681 [37]  
 DNN N1999-322011 [37]  
 TI Liquid-crystal mixture used in the adjustment of the resistance of liquid crystal compositions  
 DC E13; E14; L03; P81; P85; U11; V07  
 IN DARIUS M; **HECKMEIER M**; KIRSCH P; **REIFFENRATH V**; REIGER B; REUTER M; RIEGER B; TARUMI K  
 PA (MERE-C) MERCK PATENT GMBH  
 CYC 6  
 PIA GB 2334031 A 19990811 (199937)\* EN 78[0]  
 DE 19903746 A1 19990805 (199937) DE  
 JP 11302652 A 19991102 (200003) JA 30  
 KR 99072364 A 19990927 (200048) KO [0]  
 US 6139925 A 20001031 (200057) EN  
 US 20020084444 A1 20020704 (200247) EN  
 GB 2334031 B 20030611 (200339) EN  
 TW 239997 B1 20050921 (200677) ZH  
 ADT GB 2334031 A GB 1999-2542 19990204; DE 19903746 A1 DE 1999-19903746 19990130; KR 99072364 A KR 1999-3333 19990202; US 6139925 A US 1999-243803 19990203; JP 11302652 A JP 1999-27065 19990204; US 20020084444 A1 Cont of US 2000-658112 20000908; US 20020084444 A1 US 2001-907654 20010719; TW 239997 B1 TW 1999-101509 19990201.  
 PRAI DE 1998-19851805 19981111  
 DE 1998-19804300 19980204  
 DE 1998-19805912 19980213  
 DE 1999-19902606 19990123  
 AN 1999-432471 [37] WPIX Full-text  
 AB GB 2334031 A UPAB: 20060503

NOVELTY - The liquid-crystal mixture has a certain specific resistance and comprises an acidic compound.

DETAILED DESCRIPTION - A liquid-crystal mixture has a certain specific resistance and comprises an acidic compound in a concentration of 10 ppm to less than 10%.

An INDEPENDENT CLAIM is also included for a method of adjusting the specific resistance of the liquid-crystal mixture comprising adding an acidic compound.

USE - The liquid-crystal mixture is used in STN, AMD, TN or IPS liquid crystal displays.

ADVANTAGE - The liquid-crystal displays have prespecified specific resistance values and the specific resistance of the liquid-crystals can be adjusted reproducibly.

L3 ANSWER 34 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 1999-406387 [35] WPIX Full-text  
 DNC C1999-120257 [35]  
 DNN N1999-303051 [35]

TI Difluorobenzofuran and dihydrodifluorobenzofuran derivatives of linear (poly)cyclic compounds

DC E13; L03; P85; U11; V07

IN BREMER M; REIFFENRATH V; TARUMI K

PA (MERE-C) MERCK PATENT GMBH

CYC 1

PIA DE 19900517 A1 19990722 (199935)\* DE 33[0]

ADT DE 19900517 A1 DE 1999-19900517 19990108

PRAI DE 1998-19801817 19980119

AN 1999-406387 [35] WPIX Full-text

AB DE 19900517 A1 UPAB: 20060503

NOVELTY - 6,7-Difluorobenzofuran and 2,3-dihydro-6,7-difluorobenzofuran derivatives of linear (poly)cyclic compounds are new.

DETAILED DESCRIPTION - 6,7-Difluorobenzofuran and 2,3-dihydro-6,7-difluorobenzofuran derivatives of linear (poly)cyclic compounds, of formula (I), are new.

W = a 2,3-dihydro-6,7-difluorobenzofuran-7-yl group of formula (IIA) or a 6,7-difluorobenzofuran-5-yl group of formula (IIB);

R1 = H, 1-12C alkyl or 2-12C alkenyl, optionally mono-substituted by cyano (CN) or trifluoromethyl (CF<sub>3</sub>), in which methylene (CH<sub>2</sub>) group(s) may be replaced by groups of the formulae -O-, -S-, -CO-, -CO-O-, -O-CO- or -O-CO-O- without directly linked hetero-atoms;

R2 = H or 1-8C alkyl;

A1, A2 = (a) trans-1,4-cyclohexylene (Cyc), in which non-adjacent CH<sub>2</sub> group(s) may be replaced by -O- and/or -S-; (b) 1,4-cyclohexenylene; (c) 1,4-phenylene (Phe), in which 1 or 2 CH groups may be replaced by N; or (d) 1,4-bicyclo(2,2,2)-octylene, piperidin-1,4-diyl, naphthalen-2,6-diyl, decahydronaphthalen-2,6-diyl or 1,2,3,4-tetrahydronaphthalen-2,6-diyl; and groups (a), (b) and (c) may be substituted by CN, Cl or (F);

Z1, Z2 = -CO-O-, -O-CO-, -CH<sub>2</sub>O-, -O-CH<sub>2</sub>-, CH<sub>2</sub>CH<sub>2</sub>-, CH=CH-, -C triple bond C- or a single bond; and

n = 0, 1 or 2.

USE - Compounds (I) are used as components of liquid crystal (LC) media; and LC media containing at least 2 LC components, including at least 1 compound (I), are used in LC displays and as dielectrics in electro-optical displays (all claimed). (I) are especially useful in displays of the twisted cell, guest-host, deformation of aligned phase, electrically controlled birefringence or dynamic scattering type and are also useful for producing *chiral* tilted smectic LC phases with ferroelectric properties. Optically active LC compounds (I) with branched R groups are useful as *chiral* dopants.

ADVANTAGE - (I) are stable LC or mesogenic compounds and give stable LC media. They have high thermal stability and a good holding ratio and also strongly negative dielectric anisotropy, medium to very low birefringence and a good phase ratio.

L8 ANSWER 35 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 1998-262655 [24] WPIX Full-text  
 DNC C1998-081600 [24]  
 DNN N1998-207081 [24]

TI *Chiral* dopants for liquid crystal media - comprise ether derivatives of e.g. substituted *phenol* or cyclohexanol compounds and *chiral* alcohol compounds with alkynyl or alkenyl groups

DC E19; L03; P81; P85; U11; U14; V07

IN REIFFENRATH V. WEBER G  
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 AN 1998-262655 [24] WPIX Full-text  
 AB DE 19746289 A1 UPAB: 20050521

Dopants of formula (I) are claimed: R1-(-A1-Z1-)n-A2-W (I)  
 -O-C(X)-R9 (W)

W = a group of formula (W); X = -C≡C-Y or -CH=CH-Y; Y = (a) H, 1-15C alkyl or alkenyl (optionally substituted with one CN or CF<sub>3</sub> group or at least one halogen atom and optionally with one or more CH<sub>2</sub> groups replaced by -O-, -CO- or -COO- groups, with no direct links between hetero atoms), or (b) a phenylene (sic) group which may be substituted with CN, Cl, F or with 1-8C alkyl, alkenyl or alkoxy (in which one or more H atoms may also be replaced by F), and in which one or two CH<sub>2</sub> groups may be replaced by N; Ra = linear 1-15C alkyl; R1 = as for Y (a) but with CH<sub>2</sub>-replacing groups extended to O, S, CO, COO, OCO or OCOO; A1, A2 = (a) trans-1,4-cyclohexylene (optionally with one or more non-adjacent CH<sub>2</sub> groups replaced by O and/or S), (b) 1,4-cyclohexenyl, (c) 1,4-phenylene (optionally with one or two CH<sub>2</sub> groups replaced by N), or (d) 1,4-bicyclo[2.2.2]octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl or its decahydro- or 1,2,3,4-tetrahydro- derivatives, and in which groups (a), (b) and (c) may also be substituted with CN, Cl, F or 1-5C alkyl or alkenyl; Z1 = -COO-, -OCO-, -CH<sub>2</sub>O-, -OCH<sub>2</sub>-, -CH<sub>2</sub>CH<sub>2</sub>-, -CH=CH-, -C≡C- or a single bond; n = 0, 1, 2 or 3; and in which, if A2 = unsubstituted 1,4-phenylene and X = -C≡C-H, A1 cannot be 1,4-phenylene or phenylene with one or two CH<sub>2</sub> replaced by N. Also claimed are (i) liquid crystal (LC) media containing at least one dopant (I), and (ii) electro-optical displays containing these LC media.

USE - As dopants in nematic LC media, to adapt the cholesteric pitch of the medium to the requirements of different applications.

ADVANTAGE - The addition of even small amounts of (I) to tilted smectic LC phases produces a marked twist in the cholesteric phase, and will also compensate the pitch of another dopant. Pure (I) are colourless compounds with good chemical, thermal and light stability, often with the ability to form LC mesophases in a temperature range suitable for electro-optical applications.

Member(0002)

ABEQ JP 10158652 A UPAB 20050521  
 Dopants of formula (I) are claimed:  
 R1-(-A1-Z1-)n-A2-W (I)  
 -O-C(X)-R9 (W)

W = a group of formula (W); X = -C≡C-Y or -CH=CH-Y; Y = (a) H, 1-15C alkyl or alkenyl (optionally substituted with one CN or CF<sub>3</sub> group or at least one halogen atom and optionally with one or more CH<sub>2</sub> groups replaced by -O-, -CO- or -COO- groups, with no direct links between hetero atoms), or (b) a phenylene (sic) group which may be substituted with CN, Cl, F or with 1-8C alkyl, alkenyl or alkoxy (in which one or more H atoms may also be replaced by F), and in which one or two CH<sub>2</sub> groups may be replaced by N; Ra = linear 1-15C alkyl; R1 = as for Y (a) but with CH<sub>2</sub>-replacing groups extended to O, S, CO, COO, OCO or OCOO; A1, A2 = (a) trans-1,4-cyclohexylene (optionally with one or more non-adjacent CH<sub>2</sub> groups replaced by O and/or S), (b) 1,4-cyclohexenyl, (c) 1,4-phenylene (optionally with one or two CH<sub>2</sub> groups replaced by N), or (d) 1,4-bicyclo[2.2.2]octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl or

its decahydro- or 1,2,3,4-tetrahydro- derivatives, and in which groups (a), (b) and (c) may also be substituted with CN, Cl, F or 1-5C alkyl or alkenyl; Z1 = -COO-, -OCO-, -CH2O-, -OCH2-, -CH2CH2-, -CH=CH-, -C≡C- or a single bond; n = 0, 1, 2 or 3; and in which, if A2 = unsubstituted 1,4-phenylene and X = -C≡C-H, A1 cannot be 1,4-phenylene or phenylene with one or two CH2 replaced by N. Also claimed are (i) liquid crystal (LC) media containing at least one dopant (I), and (ii) electro-optical displays containing these LC media.

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Member(0003)

ABEQ US 6056893 A UPAB 20050521

Dopants of formula (I) are claimed:

R1-(-A1-Z1-)n-A2-W (I)

-O-C(X)-R9 (W)

W = a group of formula (W); X = -C≡C-Y or -CH=CH-Y; Y = (a) H, 1-15C alkyl or alkenyl (optionally substituted with one CN or CF3 group or at least one halogen atom and optionally with one or more CH2 groups replaced by -O-, -CO- or -COO- groups, with no direct links between hetero atoms), or (b) a phenylene (sic) group which may be substituted with CN, Cl, F or with 1-8C alkyl, alkenyl or alkoxy (in which one or more H atoms may also be replaced by F), and in which one or two CH2 groups may be replaced by N; Ra = linear 1-15C alkyl; R1 = as for Y (a) but with CH2-replacing groups extended to O, S, CO, COO, OCO or OCOO; A1, A2 = (a) trans-1,4-cyclohexylene (optionally with one or more non-adjacent CH2 groups replaced by O and/or S), (b) 1,4-cyclohexenyl, (c) 1,4-phenylene (optionally with one or two CH2 groups replaced by N), or (d) 1,4-bicyclo[2.2.2]octylene, piperidine-1,4-diyl, naphthalene-2,6-diyl or its decahydro- or 1,2,3,4-tetrahydro- derivatives, and in which groups (a), (b) and (c) may also be substituted with CN, Cl, F or 1-5C alkyl or alkenyl; Z1 = -COO-, -OCO-, -CH2O-, -OCH2-, -CH2CH2-, -CH=CH-, -C≡C- or a single bond; n = 0, 1, 2 or 3; and in which, if A2 = unsubstituted 1,4-phenylene and X = -C≡C-H, A1 cannot be 1,4-phenylene or phenylene with one or two CH2 replaced by N. Also claimed are (i) liquid crystal (LC) media containing at least one dopant (I), and (ii) electro-optical displays containing these LC media.

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